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|---|---|
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|---|---|
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|---|---|
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|---|---|
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|---|---|
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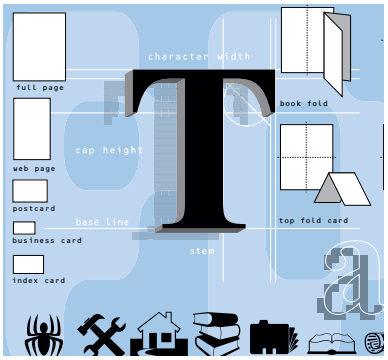

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# A budget PC isn't necessarily basic

Rob Jones is impressed at the increasing standards and decreasing prices of budget PCs

About this time last year I bought myself a new PC, for the heady sum of £612 including VAT and delivery. It didn't have all I needed, but I figured I would add the missing components over time, plus I could use others that I already had with my existing setup.

Being in the fortunate position of editing a PC magazine, it was pretty easy to do my research – a mixture of reading up on complete PCs of the sort you'll find in the pages of *PCW*, combined with looking into the type of components I wanted, so I could tailor the system I bought.

My final choice didn't come with a DVD burner, just a CD burner and a 17in CRT monitor which I replaced with my TFT. The graphics card wasn't stunning, but good enough for my needs. What the PC did have was a fast processor, loads of memory, a big hard drive and plenty of USB ports. I've been pretty pleased with my purchase, which has not suffered any major problems other than a dying monitor, which I use on a second PC. This will have been replaced under warranty by the time you read this.

A year on I have a PC sitting under my desk at home that has been upgraded with various new parts, giving me the system I want. This month's PC group test was timely in that we look at £499 PCs, a similar price point to the money I spent a year ago. And what we found is that there are some real bargains on the market – it was interesting to see just how much you can get for around £100 less than I spent 12 months ago.

The two most obvious additions are a TFT monitor, which many of the PCs on test offer as standard now instead of a CRT, and a dual-layer DVD rewriter. Dual-layer DVD burners hit the market about eight months ago and have quickly become popular. The drives typically don't cost any more than single-layer drives, largely because, for the industry, it wasn't a difficult upgrade to make, so for many PC manufacturers it is a low-cost tick box they can add to their specifications.

In addition, standard hard drives on a budget PC are typically 80GB or 120GB – lower than that just wouldn't be acceptable today for most buyers, especially those with digital cameras. Plus 512MB of memory is the norm for cheap PCs in all but a few cases. Again, go below that and even the most undemanding user will see performance drop.

The main downside to most budget machines is their use of integrated graphics, as we saw in some but not all of those tested in our group test. But leap forward another year and think about what sort of PC £499 will get you in 2006.

We speculated about this in the office and we reckon that by then all budget PCs will include a TFT monitor and that 120GB will be the minimum-size hard drive. The biggest change, though, will be greater use of 128MB integrated graphics and more manufacturers plumping for good, budget graphics cards. Again, graphics cards have taken a massive performance leap in the past 12 months and, by 2006, those boards will be cheap, low end and perfect for budget PCs.

Finally, just a quick note on warranties and post-sales customer service. I write this on the eve of a visit to Tiny, one of many companies about which readers contact us with customer service complaints. It can certainly produce low-cost PCs, which typically perform quite well in our tests. But what we can't check is post-sales service provided by PC companies, so keep your experiences coming in – both good and bad – on the manufacturers you deal with after you have made your purchase.

**'Leap forward another year, and think about what sort of PC £499 will get you in 2006'**

**Price-crash PCs**
Find out what £499 will buy you in today's PC market – page 103

**Ipod accessories**
Explore the range of add-ons available to expand your Ipod – see page 64



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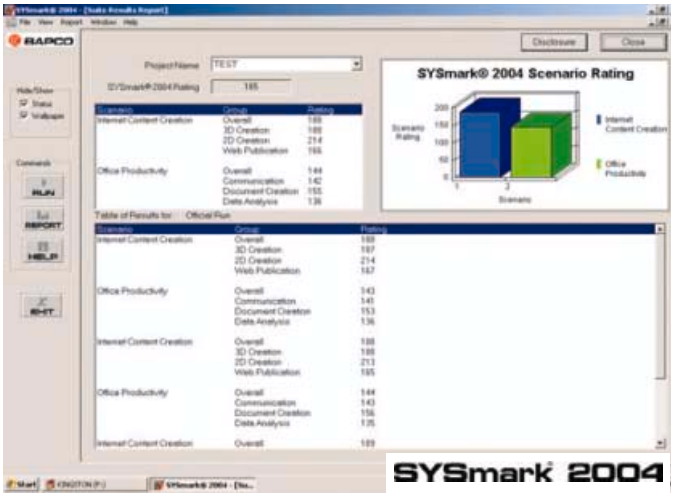
*PCW* uses the services of VNU Labs to perform all its hardware testing. VNU Labs' highly experienced staff use industry-standard benchmarks and methodologies to generate accurate, repeatable test results. Below you'll find the details of the most frequently used benchmarks that *PCW* publishes




**Sysmark 2004 tests system performance by running popular applications**

## SYSMARK 2004

Sysmark 2004 is a system productivity benchmark, designed to reflect system performance when running the most popular application software in real-world scenarios with real-world workloads.

Sysmark 2004 uses 15 applications, plus anti-virus and compression software, divided into two major categories: office productivity and Internet content creation. It runs through predefined scripts which include concurrent running of applications to test multiprocessing and multithreading capabilities.

In the office productivity scenario, the user creates a marketing presentation and supporting documents. This involves, among other tasks, receiving and detaching documents and email attachments, updating a personal calendar, querying a database, graphing up the results in a spreadsheet, making a slideshow and reviewing the results in a browser.

The Internet content creation scenario includes creating a website targeted at broadband and narrowband audiences. First, a 3D model is rendered into a bitmap while web pages are being prepared. A video movie is then edited from several audio and video clips and processed, while the rendered bitmap file is modified in Adobe Photoshop. Back in the 3D modelling software, the user exports a 3D model as a vector for later use. Once the movie is finished, the user adds special effects and image files before optimising it for faster animation. The final movie is then compressed for delivery over the Internet before the system is scanned for viruses.

Scores are calculated for each of these categories based on various sub-tasks, which are also given individual scores. Individual tasks are scored based on 'response time' – the time the system takes to complete a task initiated by the user. Responsiveness to the user is always scored more highly than the total time taken to complete a number of tasks.

These scores are based on a comparison between the test system and a reference PC with a 2GHz Pentium 4 processor, an Intel D845GBV-based motherboard, 512MB of DDR266 CL2.5 Ram, a 64MB ATI Radeon 9700 Pro graphics card, an 80GB IBM 2MB cache, 7,200rpm hard drive formatted with the NTFS file system and Windows XP SP1.

A score of 100 indicates that the system has a performance equal to the reference PC, 200 indicates twice the performance and so on. We run the benchmark at a resolution of 1,024 x 768 in 16bit colour. It is run three times, rebooting between each category.

When testing PCs and notebooks, we first configure them with standard desktop settings. This includes removing all start-up programs, automatic updates, desktop wallpaper, screensavers and proprietary system tray utilities. This is done in order to ensure the repeatability of tests.

The applications within each category of Sysmark 2004 are as follows:

### Office productivity

Adobe Acrobat 5.0.5, Microsoft Access 2002 SP2, Microsoft Excel 2002 SP2, Microsoft Outlook 2002 SP2, Microsoft Powerpoint 2002 SP2, Microsoft Word 2002 SP2, Microsoft Internet Explorer 6.0 SP1, Scansoft Dragon Naturally Speaking 6 Preferred, Network Associates McAfee Virus Scan 7.0, Winzip Computing Winzip 8.1.

### Internet content creation

Adobe After Effects 5.5, Adobe Photoshop 7.01, Adobe Premiere 6.5, Discreet 3ds Max, Macromedia Dreamweaver MX, Macromedia Flash MX, Microsoft Windows Media Encoder 9 Series, Network Associates McAfee Virus Scan 7.0, Winzip Computing Winzip 8.1.

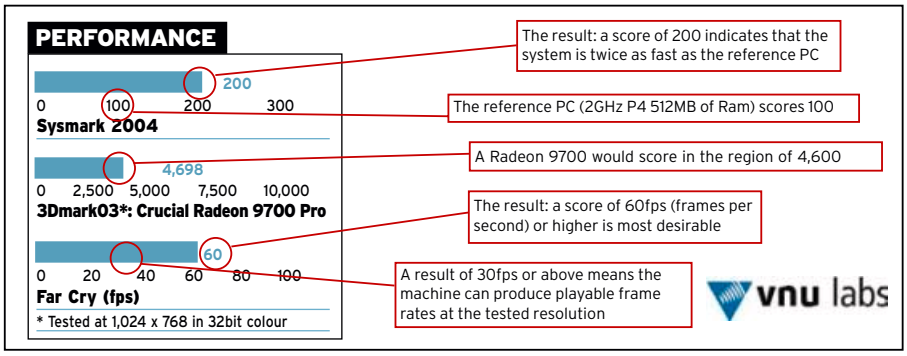
See **www.bapco.com** for pricing information and full details of testing strategies and methodologies.

## 3DMARK03

3Dmark03 consists of four tests. The first examines DirectX 7 performance; the following two are DirectX 8; and the final test is DirectX 9. While in theory this means that any DirectX 7 card could run at least part of the test and therefore achieve a score, none have the raw power to run at the speeds 3Dmark03 demands.

The result is calculated by taking an average of the frame rates from the first three tests. The results from the fourth test are included, but has a lesser bearing on the final score.

This version will only fully run on DirectX 9 compliant cards. 3Dmark03 is suitable for modern cards in the budget to mid-price ranges. For the latest cards, we use 3Dmark05. 3Dmark 2001 has now been officially retired by VNU Labs.



Far Cry is a real challenge for modern graphics cards

PCmark04 measures memory, processor, graphics and hard drive performance

## 3DMARK05

3Dmark05 is the latest version of Futuremark's 3D graphics benchmark. It is a demanding test designed to stress the latest generation of DirectX 9-compliant cards, and will only work with models that support Pixel Shaders 2 and have DirectX 9c installed.

Using the same interface as 3Dmark03, the main benchmark consists of three simulated game tests. These are designed to load the graphics subsystem as much as possible, although the CPU and other components can have an effect on the overall score, which is why 128MB of video Ram and a 2GHz CPU are part of the minimum system requirements for running the tests. For systems using older graphics cards that don't meet the 3Dmark05 requirements, we will continue to use 3Dmark03.

Scene complexity has been increased to one million rendered polygons per frame on average, making this one of the toughest tests available for a modern 3D graphics card.

## FAR CRY

We use the Far Cry game from Ubisoft for testing DirectX 9 gaming performance. The default demo we use is timedemo on the 'Fort' level. Far Cry's game engine is very graphics-intensive, so it presents a real challenge to modern graphics cards. For PC and notebook testing we test at 1,024 x 768 pixels, 32bit colour, 75Hz refresh and default settings for both anti-aliasing (AA) and anisotropic filtering (AF).

When it comes to testing graphics cards, in addition to the standard test, the card is also tested at 1,024 x 768 with 4x AA and 4x AF; 1,600 x 1,200 with 4x AA and 4x AF and 1,600 x 1,200 with maximum quality settings.

## PCMARK04

Part-way between application-based and entirely synthetic benchmarks, PCmark04 uses a hybrid technology, employing portions of real applications to produce realistic performance results without the overhead of installing complete software packages.

It contains four main suites of tests for measuring memory, processor, graphics and hard drive performance, as well as that of the overall system. It is also customisable, which allows user-specified tests to be configured. For more information on PCmark and 3Dmark, visit **www.futuremark.com**.

## BATTERY TEST

To get a feeling for the length of time a notebook battery will last, we run a specific test. Based on a looping Excel Visual Basic application, the test opens worksheets, generates random numbers and pivot tables, then zooms, and adjusts the brightness and contrast of an image. The application also includes 2D animation and periodically halts to simulate natural human pauses. The running time is recorded to disk every 30 seconds until the battery power diminishes.

## TEST BEDS

When testing graphics cards, motherboards, hard disks and optical drives, we use two test PCs. The first uses an Intel Pentium 4 3.2GHz Northwood C with an 800MHz front-side bus (FSB), the second has an AMD Athlon 3200XP+ using a 333MHz FSB. Each has two 512MB PC3200 modules of Corsair memory, a 120GB Western Digital hard drive with 8MB cache and a Crucial Radeon 9800XT Pro graphics card. Graphics and hard disk tests are primarily performed on the Intel system. A fresh image of the hard disk is applied to the PC before any tests begin, and the same image is then used each time for consistency.

3Dmark05 pushes modern graphics cards to their limits

3Dmark03 will be used to test older graphics cards



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# News

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### Focus on

38 **Revolutionary Cell**

The new Cell processor developed jointly by IBM, Sony and Toshiba will power the Playstation 3 console. But it has a much wider potential and could challenge the dominance of the classic PC architecture

## Latest on IDF

Intel was expected to release details of a new Itanium processor, codenamed Poulson, at the Spring Intel Developer Forum which opened as we went to press. It is the successor to the Tukwila generation slated for release in 2007.

The news will confirm at least that the company intends to continue with the 64bit Itanium despite several setbacks – see page 18 for more on those.

There will be more on IDF in our next edition but if you can't wait until then, look out for the reports from the Forum on the *PCW* website at www.pcw.co.uk.

## MacOS on a PC?

Several PC vendors have urged that the MacOS should be ported to the PC platform, Apple boss Steve Jobs said last month. It appears that he has no intention of doing so, but there is talk of Apple using the new Cell processor (see contents panel).

# DSL speeds up – with snag

BT is to trial next-generation ADSL2+ services that use clever modulation techniques to push line speeds up to 18Mbits/sec. The trial by the wholesale arm of BT was announced as part of a few changes under which many users saw their line speeds increase to 2Mbits/sec at no extra charge.

But there was a snag: most of the new deals included a usage cap. This reflects a new policy of tying prices to real costs: it is the volume, not the speed, of traffic that service providers pay for.

The latest changes stem from a review by watchdog Ofcom calling for price cuts. They are probably also a response to BT rivals that have installed their own DSL equipment in many BT exchanges and are already offering fast deals (see *PCW* February, page 16).

BT Wholesale announced that it was going to push line speeds up to a maximum of 8Mbits/sec, which meant that the many service providers reselling its bandwidth could themselves increase speeds. The result was a rush of new offers from ISPs.

BT Yahoo and BT Broadband led the way by upgrading all their consumer-class users to 2Mbits/sec, with a 15GB or 30GB cap depending on tariff. The only exception was the £19.99 basic service, which was boosted to 1Mbits/sec with a 1GB cap. Business-class customers were all moved to 2Mbits/sec with no cap.

BT claimed that subscribers had already been quietly capped for months, but that the limit had not been enforced, but that didn't satisfy everyone.

Reader Ioannis Bazianas, a student at Kingston University, said he had been using a 1Mbits/sec BT service for six months and had chosen it because he believed it was not capped. Bazianas questioned whether BT had the right to change the terms of the service, and said: 'BT's "upgrade" is a downgrade for my usage.'

The cited speeds should be taken with a health warning because they are affected dramatically by the quality of your line. You will get the very top speeds only if you live close to an exchange.

BT reseller Plusnet, which has some of the most imaginative pricing schemes, has taken speed out of its deals altogether. Its users are given the best speed available on their lines and prices are based on relatively generous caps: 30GB, with unlimited downloads between 1am and 8am, allowing users to schedule heavy traffic in the night.

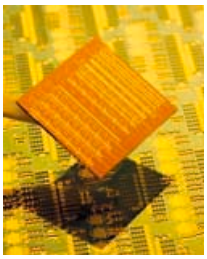
It also offers a 2Mbits/sec pay-as-you-go deal for £14.99 capped at 1GB, plus £1.50 per extra gigabyte.

Pipex, another BT reseller, announced a range of deals starting at £14.99. It is offering a free hotel accommodation at a number of resorts across the world to people who sign up for some of its 1Mbit/sec and 2Mbits/sec uncapped services.

**Clive Akass**

## How photonics could change your life

**Forget 2Mbits/sec or even 18Mbits/sec... how about 80Gbits/sec? That's the promise of the device pictured here, which squeezes eight lasers onto one piece of silicon. It has been developed by Intel as a part of a project to make photonic links mainstream. If you don't know what they are, you soon will, because they have to potential to change lives. Read all about it in our photonics special report starting on page 32.**



# Canon shoots a winner

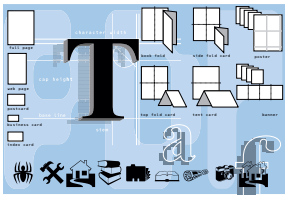
Photography buffs are ogling the latest offering from Canon, an upgrade of its EOS-300D, which was one of the first affordable digital single-lens reflex cameras to hit the market.

The new 8megapixel EOS-350D is smaller, lighter, and can shoot 3 frames per second (fps) for 14 frames, compared to 2.5fps for four frames on the 300D, and the same Digic II processor of the current high-end line-up.

It costs a recommended £799 inc VAT complete with an 18-55mm EF-S lens. *PCW*'s Gordon Laing, who has seen it, said: 'I think I'll get one!'

**Canon's new EOS 350D... faster and smaller than the 300D**

**DTP for under £100**
Five packages in the spotlight – see page 125



**110 Windows utilities**
All the tools you'll ever need – see page 89

# HP glee as Carly is sacked

HP was still looking for a chief executive as we went to press – two weeks after Carly Fiorina was ousted to the undisguised glee of many of her staff.

It was Fiorina who pushed through the controversial merger with Compaq, opposed by many of the old guard at HP. Its stock value has since plunged by 50 per cent.

A statement by the HP board said Fiorina had agreed to step down, but she made clear in a statement that her move was not voluntary. 'While I regret that the board and I have our differences about how to execute HP's strategy,' she said, 'I respect their decision.'

There were stories of HP staff dancing in their cubicles when they heard of the departure.

**Fiorina... had an 'abrasive manner'**

Fiorina was known as Her Royal Horribleness because of her abrasive manner with underlings, in contrast to the paternalistic attitude of the company founders Walter Hewlett and David Packard. She also presided over the company's first redundancies – 15,000 in 2003.

There was much speculation about what sparked her departure. Stopgap chief executive Robert Wayman said that it had nothing to do with strategy, but Fiorina has been accused of concentrating on bottom lines at the expense of innovation.

Wayman ruled out splitting up the company, a possibility about which there has been much speculation.

UK analysts Quocirca criticised this assessment as premature and suggested in a report that a split into enterprise and consumer divisions might provide a better focus. The report warned: 'Even if a split like this takes place, much work remains.'

# PCs still get 'banned' Media Player

PCs sold in Europe may still be sold with XP and Media Player, despite an EC anti-monopoly ruling that the two products should not bundled.

Microsoft says PC vendors in Europe will be given the choice of loading a version of XP with or without the player, a policy it evidently believes complies with the ruling.

The aim of the ruling was to give rivals a level playing field in the sale of players, which can also be channels for the sale of music. Microsoft lawyers could point to the fact that the EC has ignored Apple's bundling of Itunes with the MacOS and its tight coupling with the Ipod player which has virtually created a download industry.

Meanwhile, in a surprise announcement at the RSA security conference in San Francisco, Bill Gates said a new version of Internet Explorer will ship this summer.

Explorer 7 was due to be released next year with the next-generation version of Windows, codenamed Longhorn, but growing concerns over security have forced an early release.

● Downloads of the open-source Firefox browser topped 25million in the two months after its launch last November, says the Mozilla Foundation.

## Challenge for Ipods

**Apple has unveiled two new Ipods designed to hold your entire collection of music and photographs. A 30GB £249 model is said to hold up to 7,500 songs and there is also a 60GB version for £309.**

**Also launched were two new Ipod mini audio players, a 4GB model for £139 and a 6GB for £169, and the fastest-yet Powerbooks, featuring PowerPC G4 processors running at up to 1.67GHz, with prices starting at £1,049 (all prices include VAT). But there must be questions about how long the Ipod boom can last – and not simply because of the plethora of me-too products.**

**Phone and PDA vendors are beginning to include Ipod features in their products, and emerging Bluetooth stereo headsets could help popularise their use. See page 18.**

**In the picture... new Ipod stores your snaps**

## VAT loophole

The Government is seeking ways to plug a loophole that lets shoppers avoid VAT by buying low-priced items like CDs and DVDs from offshore websites.

Companies, including Tesco, are setting up shop in places like the Channel Islands to exploit the fact that goods sent from abroad are VAT-exempt if they cost less than £18.

A Tesco spokesman said: 'We want to give our customers the maximum amount of choice. If that means doing what other companies are doing offshore then that is what we will do.'

A Treasury spokesman said: 'The Government is committed to taking action against any enterprise set up artificially with the purpose of avoiding paying tax.'

**Anthony Dhanendran**

## Hack and sue

Owners of unsecured PCs could get sued if their machines are taken over by hackers and used to launch spam or distribute denial-of-service attacks that swamp sites with hits, a security conference was warned. Rogue code dropped by viruses or dodgy download sites is often used to disguise the source of attacks. Cyber-lawyer Jon Stanley told the RSA Conference in San Francisco that users may eventually have to take out cyber insurance.

## Less porn

Junk porn email fell by a 92.5 per cent in February, but spam offering dating services surged by 171 per cent, says email specialist Email Systems. Total spam rose slightly, with more than nine out of 10 emails unsolicited. It peaked on 6 February with a staggering 97.6 per cent of all email being spam.

## Touchstream

In our review of the Fingerworks Touchstream keyboard, which accepts a variety of gestures as commands, we omitted to mention that it is available from www.backinaction.co.uk.



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>> The upload-download debate
Mobile phone companies are getting it wrong – see p50

### >> 3G Windows

T-Mobile has unveiled what it says is the first Windows Mobile-based 3G phone, which also doubles as a PDA allowing business users realtime access to email and other files. Prices will be announced at launch time.

### >> XDA upgrade

$O_2$ has launched an upgraded version of its XDA handheld phone with an improved 1.3megapixel camera and Wifi and 3G support. The memory of the XDA IIi has been increased to 59MB and it uses a faster Intel PXA272 running at up to 520MHz. Prices start at £179.99, depending on tariff.

# Nokia deal shakes 3GSM

A deal between Nokia and Microsoft has shaken up the smartphone market and could prove a blow to operators. It was symptomatic of a general move by handset vendors to get a slice of the music-player market opened up by Apple's Ipod.

Nokia agreed to work with Microsoft to get its future models to support the latter's Media Player formats and digital rights management. This would make it easier to swap tracks to and from a PC – cutting out operators that hope to make big money selling tracks over the air.

Operators facing a saturated telephony market are obsessed with pushing up their average revenue per user (ARPU), by using the sale of video clips and audio tracks that in many cases are playable only on the handset that downloaded them. It has never been clear how long they expected users to ignore alternative sources.

The Nokia deal, which was the talk of 3GSM, the industry's annual conference in Cannes, will help open the market to any music vendor through any delivery channel. Almost as momentous was an agreement by Nokia to license Microsoft's Exchange Server Activesync protocol which will allow its phones to offer Blackberry-style email on the move and realtime synchronisation of calendar and contacts files.

Nokia is a prime mover of SyncML, an open standard for doing these tasks and it has lobbied the EC to pressure Microsoft to open its Exchange protocols. Nokia says it will continue to support SyncML.

# Singing phones lack radio headsets

Stereo Bluetooth headsets that can be used for telephony as well as music remain the missing link that will surely establish mobiles as music platforms. A Bluetooth specification was approved months ago and prototypes have been developed, but they have yet to hit the market.

The specification is supported in the new Symbian OS, version 9 and handsets using this are expected to appear this year.

There is no shortage of interest in producing musical phones. However, Sony Ericsson is using the Walkman brand for a range that was due to launch the day *PCW* went to press – see our website for the latest details. They will allow users to transfer existing CD collections to their phones via a PC.

Future products will be capable of playing copy-protected music tracks purchased via a PC or the phone. Naturally, they will work with Sony's own Connect music download service.

The 6681, one of two 3G phones Nokia launched at 3GSM, includes a high-quality music player with a stereo output and software for organising tracks in Ipod-style playlists. Like the second model launched, 6680, it features two cameras: one video and the other a 1.3megapixel still camera.

**Sendo's X2 phone can pick up mp3 files from a PC using Bluetooth**

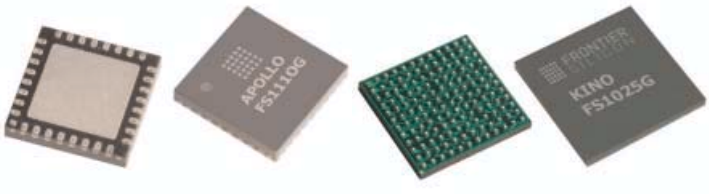
UK mobile phone vendor Sendo launched the X2 music phone, which can use Bluetooth to collect mp3 tracks from a PC. It will be available this summer.

# Mobile chipset enables multimedia broadcasts

Another potential disruptive technology for mobile operators was launched at 3GSM by Frontier Technology, which designed the chips used in many current Digital Audio Broadcasting (DAB) radios.

It announced a new mobile chipset implementing DMB, the multimedia flavour of DAB, which allows the delivery of rich content, including TV to handhelds.

Chief executive Anthony Sethill told *PCW* that later this year the company will also be sampling a version supporting DVD-H, a mobile version of the DVB system used to deliver terrestrial free-to-air TV. Moves are afoot to implement services using both these technologies in the UK for broadcasts to mobile devices. Whether they coexist or one dominates, depends as much on the politics of spectrum allocation as on technology.




**Back and front views of the new Frontier DMB chipset**

DNB needs heavy processing, so handset designers will be looking closely at the power drain of Frontier's new chipset, which consists of an RF and baseband module. Frontier says it is the lowest drain available.

Cost is another barrier to market. Sethill reckons first-generation implementations would add about £50 to the price of a handset, which would fall to £25 as the market grows.

This is on devices often sold at a discount by operators, who may try to discourage device makers from using a technology that might cut download revenues. But operators could decide to get into broadcasting themselves.

Broadcasters who think in terms of either pure radio or TV may need to rethink. Small-screen multimedia, viewed close up, can make more use of text and is likely to end up neither radio nor television, but rather a medium in its own right.



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# Microsoft thrills to 64bits

**The industry is poised for the release of 64bit Windows XP as Intel launches the first desktop processors able to take advantage of it. But how many users really need them?**

Microsoft was gearing up last month to release the long-awaited 64bit version of Windows XP, as Intel launched no fewer than six new 64bit processors (see below). Final code is expected to ship before June, together with a 64bit version of Windows Server 2003.

A new pre-release version of XP64 was made available to registered beta testers and then quietly posted on the Microsoft site for general download (see caption above right). It is called variously Service Pack 1, Release Candidate 2 (RC2) and version 1433. A near-final 64bit version of Windows Server 2003 is also available.

XP64 is a hefty 450MB download and comes in ISO format so it needs to be burned to a CD before installation. You can opt to be sent a CD.

Beta testers discussing the software in web newsgroups reported that it seems stable though you can encounter problems with drivers for peripherals. Microsoft forbids discussion of performance of beta code as it may not be fully optimised.

**XP64... the latest. As you can see, the desktop doesn't look much different. A beta version is available for download from www.pcw.co.uk/downloads/1161589**

The major advantage of 64bit processing is that it can directly address large amounts of memory: up to 1TB compared with 4GB for 32bit. This means data can be accessed and manipulated in fast Ram with no need to use relatively slow disk storage.

This is very useful for large database applications and high-definition graphics; it could also speed up and enhance games, once coders start to take advantage of it. For now few desktop users have a real need for 64bit code, at least until 64bit applications begin to appear next year.

This is why Intel took so long to move its classic x86 PC architecture to 64bit. Its hand was forced by Microsoft's announcement in late 2003 that it was developing a 64bit version of Windows for AMD's 64bit chips, which used an extended version of the x86 instruction set. At the time Intel had no 64bit x86 processor on the market and was pitching its 64bit Itanium processors, which have a different architecture, for heavy-duty workstations and back-office systems that use a large memory space. Ironically, the Itanium was already being squeezed in the workstation market by Intel's own powerful 32bit Xeons. And this tightened when, to avoid being outflanked by AMD, Intel launched a 32/64bit Xeon capable of operating in either mode.

Intel sold two million of these in nine months and they are now outselling 32bit Xeons by a ratio of four to one. That sounds like good news, albeit embarrassing for a company that had claimed people did not want 64bit. But the corresponding shrinkage in the Itanium market caused HP, which co-developed the chip with Intel, to drop its Itanium workstations.

Dell followed suit, and then last month Microsoft said it would not offer a version of Windows XP for the second-generation Itanium 2 platform, though it will get a version of Windows Server 2003. That virtually corrals Itanium 2 into enterprise servers and specialist workstations, leaving x86 still dominating the desktop and mainstream workstations.

A lot of people are undoubtedly going to be buying 64bit capabilities they do not yet need; but the new processors do offer future-proofing. If Ram prices drop and capacities rise at the rate they have in the past few years, even entry-level PCs could soon burst beyond the 32bit address space. **CA**

## New Pentiums show a big speed boost – even using 32bit code

**Intel's latest 64bit chips include five Pentium 4s, which are the first to be targeted at desktop PCs. First tests in our labs show a performance improvement of up to 23 per cent even though they were done on the 32bit version of Windows XP SP2. The chips offer 2MB of Level 2 cache, following a recent Intel policy of concentrating on chip memory and parallel processing rather than clock speed to boost performance.**

**The processors include a 3.73GHz Extreme Edition, with a 1,066MHz front-side bus (FSB), that will sell in bulk for $999 (£518 approx) and four 6xx-series: the 3.6GHz 660, the 3.4GHz 650, the 3.2GHz 640 and the 3GHz 630. These four all use an 800MHz FSB and cost $605 (£314), $401 (£208), $273 (£141) and $224 (£116) in bulk respectively.**

**The table (see right) compares the performance of the new P4EE and the P4 660, using the latest Prescott architecture, with that of a 3.46GHz P4EE using the previous generation Northwood design. Both show marked improvements, even though the 660 is around £200 cheaper.**

**Intel also launched a new 64bit Xeon, codenamed Irwindale, with 2MB of Level 2 cache that the company says helps boost performance by 18 per cent over previous versions. It includes new power management and security features. Not to be outdone, AMD demonstrated a dual-core Athlon64 processor made using a 90nanometer process.**

| PCMark 04 benchmark | 3.7GHz P4 EE | 3.6GHz P4 660 |
|---|---|---|
| Overall | 7.01 | 3.94 |
| File compression | 14.48 | 0.66 |
| File encryption | 22.92 | 19.68 |
| File decompression | 8.59 | 4.49 |
| Image processing | 17.18 | 11.47 |
| File decryption | 7.70 | 3.98 |
| Audio conversion | 8.99 | 3.56 |
| WMV video compression | 3.88 | 2.20 |
| DivX video compression | 18.64 | 13.31 |
| Memory benchmark | 15.47 | 6.66 |

**Figures in each column show the percentage performance improvement of a 3.7GHz Pentium 4 Extreme Edition and 3.6GHz P4 660, compared with a 3.46GHz P4 Extreme Edition. Absolute benchmark scores are at http://tinyurl.com/6c37n.**

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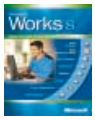

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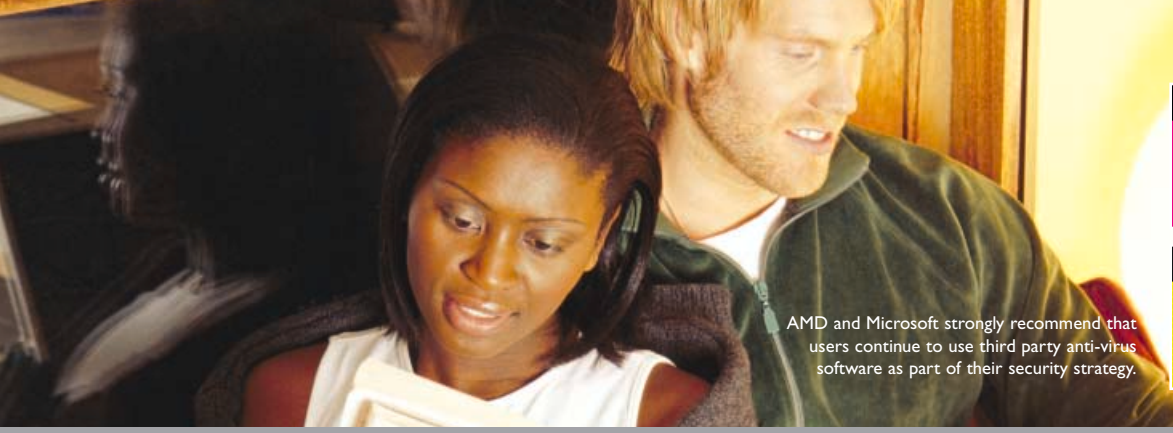


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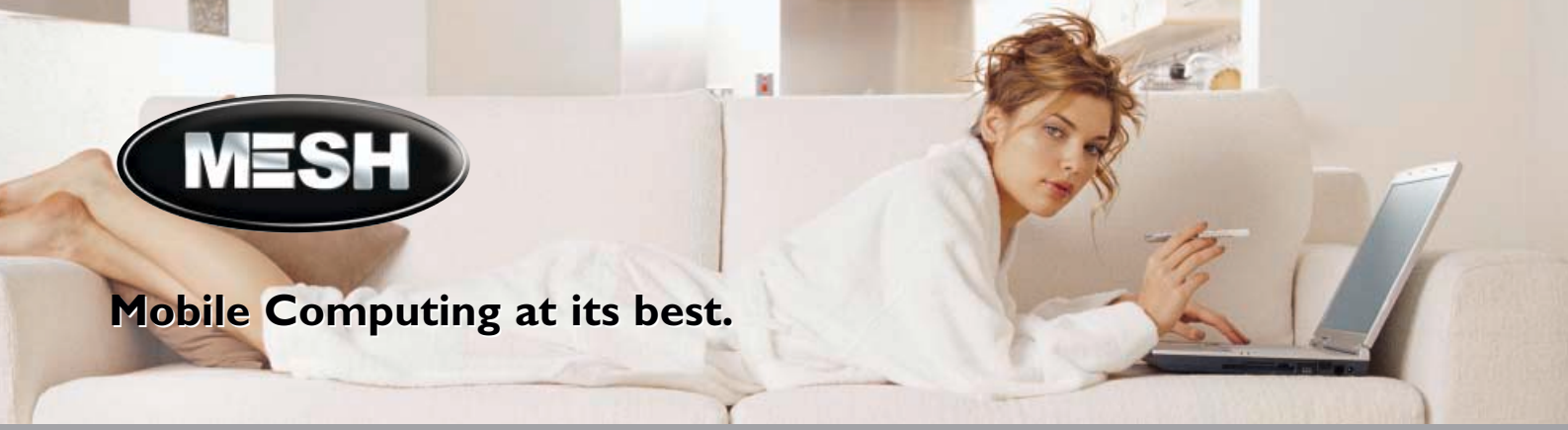

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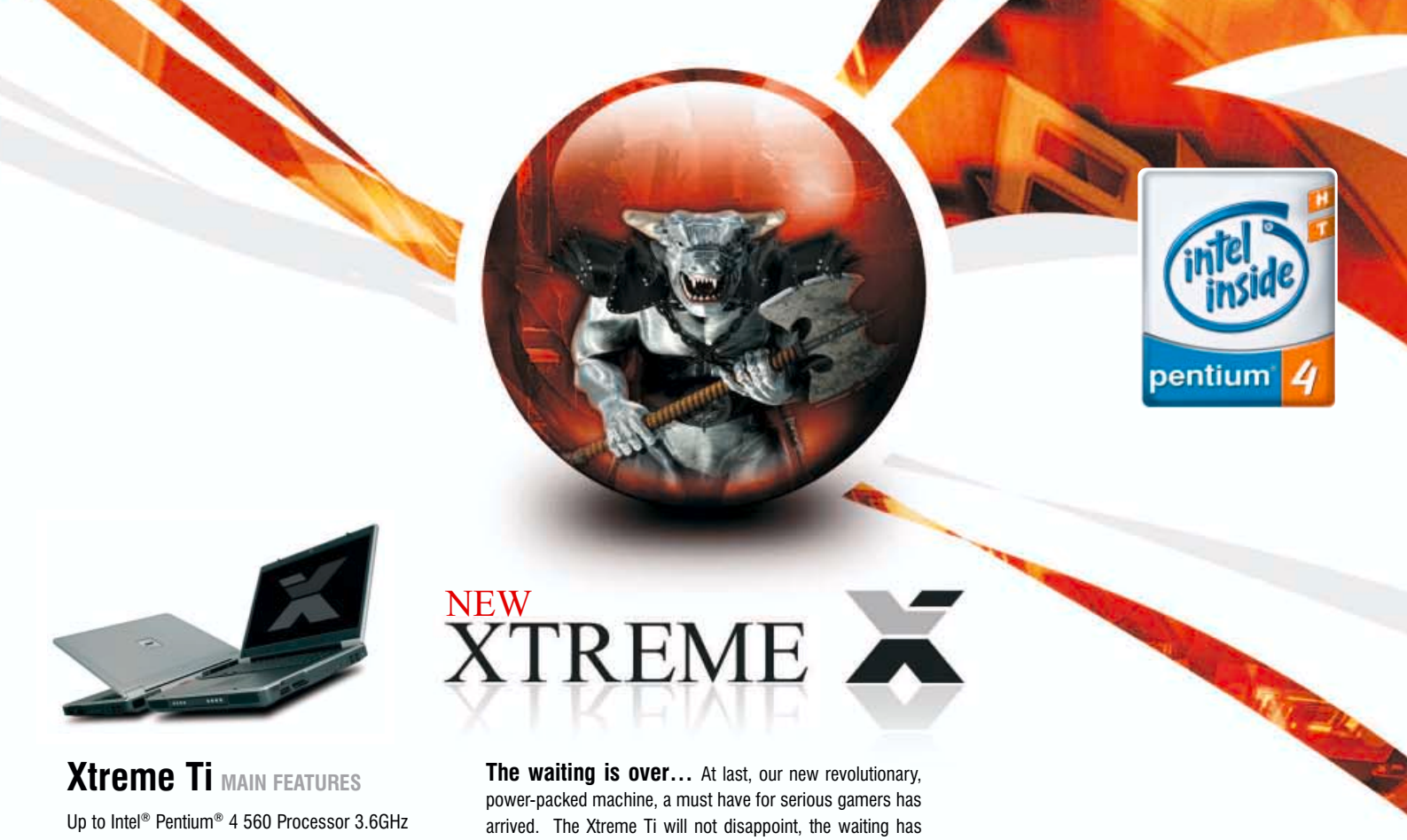



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# Computing trips the light fantastic

**Britain has made a big investment in the marriage of photonics and electronics, which is set to change lives and drive computing into the woodwork. Clive Akass reports**

Products on display in a former slaughterhouse on the outskirts of Edinburgh last month indicate how computing is shaping up for the 21st century. Or, to put it another way, how computing is beginning to see the light.

Twentieth century IT grew out of electronics, the subtle use of the movement of electrons. But now that electronics is stretched to its limits, there is increasing interest in a similar use of photons, the smallest possible packets (quanta) of light.

Photonics is to photons what electronics is to electrons. Opto-electronics, or optronics, is where photonics and electronics meet, for instance, in the laser-driven, read-write head of an optical disc, although the two terms are often used interchangeably.

Optical drives and links have been around for a while, so you might think optronics is somewhat old hat. But, in fact, as last month's Edinburgh Innovation Showcase for micro- and opto-electronics revealed, computing has only begun to exploit its potential. The UK, particularly Scotland, has taken a huge punt in the form of investments, that it is going to be very big indeed.

The major use of optronics is in extremely fast data links at all scales: international, national, neighbourhood, household, chip-to-chip and even inside chips. They give virtually unlimited bandwidth, there is no crosstalk (interference) between neighbouring feeds, they are hard to eavesdrop and they connect at the speed of light – literally.

***PCW* featured a QVGA (320 x 240) organic microscreen from Edinburgh-based Microemissive Displays in January 2005 (page 33). It measures just 5.76 x 4.32mm and uses polymer light-emitting diodes that provide a bright, sharp image. The company displayed this prototype media player, which allows you to watch movies through a magnifying eyepiece, at the Innovations show**

It is worth pondering the implications. Light-speed links in effect abolish distance, which means you can spread your computer around. Your hard disk could be in a fireproof building the other side of town, your CD or DVD drive would be history because you could obtain everything you need over the instantaneous network, and even your processing could be done across the network. Hence, the prediction that computing will eventually disappear into the woodwork. What you will be left with as a personal computer will be little more than a network interface.

The social effects are incalculable. High-definition video links will be common (see page 33) and probably in 3D to create a virtual presence. One of the downsides is that there will be electronic eyes everywhere.

But that will take decades and, in the meantime, there are many problems to overcome. One is almost ludicrously basic: how to physically connect optical links easily and consistently. Fibre can't simply be tied or soldered together like wires and usually needs to be aligned precisely; on motherboards and chips you need to create microscopic, even nanoscopic, waveguides – the photonic equivalent of wires – and find a way to get light in and out of them.

Then you need a way to put a multi-gigabit signal onto light; that is, to translate electronic data into photonic data billions of times a second. And how do you route this photonic signal, and amplify it and clean it up in repeater units on long links, without creating bottlenecks by converting it to and from the electronic domain?

These problems have been solved, or lived with, in large and expensive fibre-optical systems. The technology is now in the process of evolving towards the kind of price-performance spiral that made electronic computing available to a mass market.

Crucial to this process is the incorporation of optronics into highly integrated processors that can be mass-produced cheaply. Coincidentally, Intel announced a breakthrough in this shortly after the Edinburgh showcase (see page 33).

Wyn Meredith, a senior engineer at Glasgow-based Compound Semiconductor Technologies (CST), says the UK's opto-electronics industry was badly hit by the dotcom crash and is only just beginning to recover. Predictions of Internet traffic growth in the late 1990s were far too high. As a result, 'everyone ramped up their capacity, took on too many people and, when the bubble burst, pulled out completely', he says.

During the height of the boom, a lot of start-ups were funded before the technology was mature, but 'because of the exceptional market it was thought there was a chance they could make money'.

CST makes specialist discrete lasers as well as chips integrating several opto-electronic devices based on compound semiconductors, such as Gallium Arsenide (GaAs), that outperform silicon but are more expensive (see page 34).

'[Our work] is still a step forward in that, at the moment, you have discrete [standalone] lasers, discrete detectors, discrete amplifiers and fibre to string them all together,' Meredith said. 'It is going the same way silicon did 20 or 30 years ago in terms of integrating functions on a chip.

'But there is no standard in compound semiconductors like there is in silicon. There is no standard... model where you can just use repeatable blocks of design, of intellectual property. The material properties are very different and the technology is more complex than that of basic silicon,' explained Meredith.

Currently, there is no volume market for these devices, only a collection of niche markets, though there is no doubt that the future is optical, said Meredith. 'But we have a long way to go before we get there.'

## Academics get their hands dirty

**Many of the exhibitors at the show, organised by development agency Scottish Enterprise, were connected with the universities of Glasgow, Strathclyde, Stirling, St Andrews and Edinburgh. Development of Silicon Glen, like that of Silicon Fen around Cambridge, follows the model of Silicon Valley, which was populated by start-ups drawing on local intellectual powerhouses such as Stanford University. The model has helped break down academic snootiness about getting involved in business, which contributed to a dismal UK record of failing to profit from inventions. See a web version of this report for a list of links to featured companies and institutions at www.pcw.co.uk/news/1161543.**



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# Intel makes laser breakthrough

Intel has made a breakthrough in finding a way to mass-produce photonic devices cheaply with the well-tried techniques used to make silicon processors. The technology is unlikely to appear in products until the end of the decade, but it could make ultra-fast optical links mainstream and have a dramatic effect on both computing and lifestyles.

Intel's Photonics Technology Lab announced in 2003 that it had made a silicon photonic modulator that could translate electronic data into light data at 2Gbits/sec (see **www.pcw.co.uk/news/1153564**). This device has now hit 4Gbits/sec and is on course for 10Gbits/sec, according to Lab director Mario Paniccia.

The latest breakthrough is the creation of an all-silicon laser. First versions will be standalone but the aim is to integrate different photonic devices on to one processor, linking them by silicon waveguides – silicon is transparent to infra-red light.

The laser depends on what is known as the Raman effect, named after an Indian scientist who discovered in 1928 that light can excite atoms to emit photons of a different colour. These photons themselves hit other atoms to create more light at the same so-called Raman wavelength, an effect that can by boosted by adding mirrors to bounce the light about.

In some media, as you pump in more light, you reach a threshold level at which the device emits a powerful beam of a single frequency and phase – a laser beam. Intel's problem was that how ever much light was pumped in, this threshold could not be reached in silicon.

It turned out that as the light input is increased, an increasing number of atoms are hit by two photons at once, which provides enough energy to dislodge an electron. These free electrons tended to block the Raman effect.

Intel's breakthrough came in sandwiching the waveguides between the poles of a diode; an applied voltage sweeps away the rogue electrons, allowing the excited atoms to emit light (see figure 1).

A second big application is an amplifier. A data stream on photons at the Raman wavelength can be boosted by infusing it with light (see figure 2). Raman amplifiers on long-distance links use miles of glass fibre to do what the Intel device does in centimetres, Paniccia said.

The laser could also be used as a modulator by switching the diode on and off to represent data. But Paniccia explained that it is still early days and gave no indication of possible switching frequencies.

The prototype integrated eight Raman lasers on one chip: by using different colours, these could deliver eight data streams down a single piece of fibre. If the 10Gbits/sec throughput of Intel's photonic modulator is realised, the combination represents a system capable of delivering 80Gbits/sec.

FIG 1

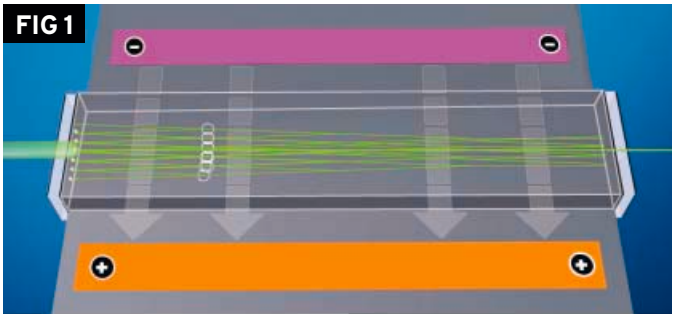
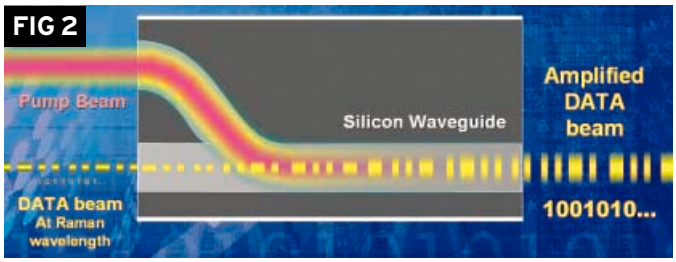


FIG 2




**Top: Atoms excited by photons entering from the left emit light, which bounces off the mirrors and excites more atoms. An electric field draws off electrons that block this effect in silicon, allowing the system to reach the threshold level required to generate a laser. Bottom: A Raman amplifier. Energising light boosts a weak signal. (Graphic courtesy of Intel)**

# Britain lags behind in fibre take-up

Exhibitors at the Edinburgh Innovations showcase expressed concerns that Britain will fall behind other countries in the deployment of optical fibre.

Countries such as Japan and Korea are already well ahead, and advancing countries such as China have an advantage in that they are building their infrastructure from scratch. Britain, on the other hand, piggy-backs stopgap DSL technologies onto antiquated phone links.

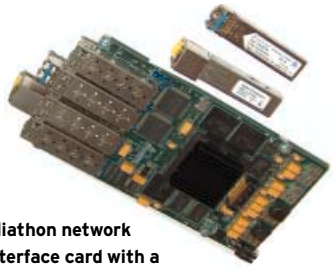
'The really scary thing for me would be if Britain were to decide, "OK, we have Wifi now, we don't need to install any cable",' said Steve McDonald, director of Fife-based Aliathon, who added that builders in some US states are legally obliged to install fibre in new homes.

And if people are going to start pumping around high-definition video, the links should surely extend into the house. Yet Intel and BT were telling builders at the Ideal Home exhibition last year that Wifi can be used instead of cable or fibre in new homes – the building of 300,000 of which is planned by the present government.

Aliathon demonstrated a 2.5Gbits/sec fibre link using its C-NIC product in which you can slot up to four finger-sized transceivers, which can be optical or copper gigabit Ethernet.

The cards cost £2,500, but the plug-in modules cost about £50 – evidence that mass-market fibre within the home could be affordable even using today's technology. It could become even more cost-effective if it were installed at the same time as the electrical wiring in a new house. Indeed, one wonders if fibre could actually be packed into the mains cable to make installation even easier.

McDonald pointed out that the 2.5Gbits/sec is only a fraction of what a fibre can carry; you can boost the throughput by using several colours at once. So, once the fibre is installed, you can push up the bandwidth by installing new boxes at each end.



**Aliathon network interface card with a choice of connect modules, including one for optical fibre**

Start-up company Conjunct announced a range of interconnect modules offering optical implementations of nine standard serial links, from USB through PCI Express to Gigabit Ethernet, at speeds of up to 2.7Gbits/sec.

Beta samples of the chip, which integrates what would currently require several separate chips, will be available this autumn.



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## Smart GPS tracks goods

Qinetiq (see right) and Global Point Technologies claim to have developed the world's most compact global tracking device. It integrates Qinetiq's Q20 High Sensitivity GPS technology with wireless links and software from Global Point.

It requires no visible antenna and has a wide range of potential uses including the tracking of goods in transit, because it can be attached to containers, pallets or even parcels. And the developers claim it can be used in situations in which conventional GPS units fail to get a fix or consume too much power.

One aim is to reduce the loss of goods due to theft or 'shrinkage', a term that covers misplaced or stolen goods. It will even send out an alert if someone tries to tamper with it.

**Steve Ranger**

# UK in chip breakthrough

Processors drawing up to 10 times less power than today's could result from research being undertaken by Intel and Qinetiq, the spin-off company from Britain's Defence Evaluation and Research Agency.

Researchers have used indium antimonide (InSb) and exploited what is known as a 'quantum well' effect to produce transistors between three and 10 times more power efficient than those in current silicon processors.

Qinetiq pioneered the use of InSb as part of a UK Ministry of Defence project, explained Tim Phillips, business manager of the fast transistors group at Qinetiq. 'It shows huge promise for advanced applications,' he said.

There is a lot of interest in using so-called iii-v semi-conductors like InSb, which comprise elements found in the third and fifth columns of the periodic table – either side of classic transistor elements like silicon and germanium which are in the fourth. Some are also used in photonics (see page 32). Transistors using them can operate at lower voltages and switch more quickly than silicon. Key to mass use is to integrate them into silicon processors that can be cheaply produced.

Scottish Enterprise awarded £730,000 to the Ultrafast Group at Glasgow University to investigate the use of another iii-v material, gallium arsenide. Leading the research, Ian Thayne said one focus is to develop ways to measure and understand what is going on at the atomic level.

## Just a MO

**Fujitsu is still making magneto-optical (MO) drives, a technology that has never hit a mass market. Its new £124.95 USB2 DynaMO 1300, weighing 230g and just 5mm thick, is little larger than its 3.5in 1.3GB disks, which cost £7.50 each. With Fujitsu itself selling a portable 100GB hard drive for £150 and 1GB SD cards selling for less than £50, MO looks like remaining a niche buy. www.fujitsudrives.com**

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# Clone yourself for PC gaming

Players could clone themselves in 3D to take part in PC games using technology from a company called Dimensional Imaging (DI). Available now is the ability to clone famous people easily to 'star' in games, said chief executive Colin Urquhart.

His system creates 3D maps of faces and bodies by analysing 2D photographs taken from different angles. The next stage is to use this data to add features to a graphical template of a head and body, said Urquhart at last month's Innovation Showcase in Edinburgh.

The process extends to 4D imaging, factoring in time, by taking a stereoscopic video of the subject to be cloned.

The focus of DI is on medical applications, which Urquhart says will help doctors visualise the results of cosmetic operations. 'For instance, in breast enlargement it is difficult to know how much volume to inject. We aim to put more science into the procedure.'

4D imaging could help analyse problems of patients who have lost some kind of facial function.

A sister company called Virtual Clones, also headed by Urquhart, concentrates on the entertainment side. You can download demos, including cloned characters for use in Unreal Tournament 2003, at **www.virtualclones.com**.

Urquhart envisages virtual matches involving real players such as David Beckham. 'I could also envisage booths set up in shops where people could get themselves cloned for games.'

# Unfuzzing Fuzz videos

Fast links will see an end to those fuzzy police videos in which people are recognisable more easily by their movements than from their features.

Prestwick-based Visimetrics already sells systems that record DVD-quality sound and audio: its Fastar Commander (below) can record eight channels on its 1.2TB disk and you can add more storage. Alastair McCleod, head of market development, said the next step is to give surveillance video the definition we expect from still cameras.

Good news for the police, perhaps, but worrying for those who think Big Brother is already watching us too closely.

A company called Exterity showed systems for pumping DVD-quality video across networks. Again chief operations officer Simon Ross said the next generation would support high-definition video.

**Fastar Commander video server**

## Chip speaks nine languages

**Epson showed a chip designed for mobile devices that will read out text in any of five languages with a choice of nine voices. The S1V30100, developed at the company's design centre at Livingston, Scotland, will also decode mp3 and aac audio files. It also allows users to download files supporting extra languages.**

## The test bed

The hottest products, news and gossip from PCW's Labs

The test bed is *PCW*'s new Labs blog, where you'll find the latest test results, product news, gossip, tips and comments from other readers. Among the highlights in the past month was the following excerpt on MSI's new Diamond motherboard, which upset a number of people. Note: we've cut out a few entries, but this is as it was in the blog, spelling and all. You can find the blog at **www.pcw.co.uk/labs**. By the time you read this, our new reader letters blog, *PCW* Interactive, will be live. You can find that at **www.pcw.co.uk/interactive**.

### MSI's tarnished Diamond (update)

MSI seems to have caused a bit of an unwanted stir with the European launch of its flagship K8N Diamond SLI motherboard, according to its dedicated user forum. The problem is MSI's 'Dual Net' adapter, a combined 802.11g/Bluetooth PCI card that was supposed to be bundled with the £150 motherboard.

Except, it seems, in Europe. So all the European punters who stumped up the cash for pre-orders are more than a little peeved.

We've contacted MSI UK about this and they've promised us an answer, so stay tuned.

**Comments**

I am a registered Diamond owner - they have not contacted me, nor answered the six emails so far that I have sent them.

There is no "optional" mentioned on *my* box - just "plus MSI Dual-Net Card".

Posted by: Eric Fox |

Same here Im not a UK customer but I did order mine in the UK. Also Im a register User in the Diamond forum and I have post plenty of posts and sent many emails with no answer yet from MSI.....

Posted by: Carlos Carrasquillo |

The price of the K8N Diamond without the dual-net card is lower due to the exclusion by around £20. Because MSI feels that some users were not adequately made aware of the exclusion of the card we have set up the e-mail address:

k8ndiamond@msicomputer.co.uk

Posted by: MSI UK |



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>> MYOB Accounting Plus 14
See our review on page 74

### >> MS attacked

Microsoft is trying to bypass an order from the European Court to open its application programming interfaces (APIs) to rivals, according to the Free Software Foundation of Europe (FSFE).

Knowledge of the APIs is needed to allow third-party software to work with Microsoft's but the company is insisting on a per-user royalty. 'That is not even complying with the wording of the European Court's decision – not to mention its spirit,' said FSFE's chairman Stefano Maffuli.

He pointed out that nobody knows how many users free software has because it can be copied by anyone.

### >> Straight to web

Splashdata has launched Splashblog, which allows Palm-powered camera phones and PDAs to publish pictures straight to the web. Versions are planned for Windows and Symbian-based devices. It costs $29.95 (£16) from www.splashblog.com or $19 (£10) if you get in before the introductory offer ends.

### >> Hit the DeCSS

A product called Ripguard plugs a 'digital hole' that allows users of DeCSS ripper software to copy and share DVD movies, developer Macrovision claims. It can work with existing DVD drives and players but movie makers could save billions by implementing it at replication plants, together with another Macrovision technology called analogue copy protection (ACP), the company says.

**Steve Ranger**

### >> Star attraction

A beta versions of Sun's Star Office suite is available for download at www.pcw.co.uk/downloads/1161578. It is said to have enhanced interoperability with Microsoft Office.

### >> Typing aid

A utility called Foretype 1.2 brings predictive typing to the PC by guessing the word you are just about to type and filling in the rest. It costs $14.95 (£8) from www.foretype.org.

# Office accounts war looms

Microsoft is set to launch an accountancy product in a move that could spark a new showdown with Europe's competition authorities. A new version of Office will include software for small business accounts, Orlando Ayala, head of Microsoft's small-and mid-sized business division, told *The Daily Telegraph*.

He said a US version would ship in 'six to 12 months' with a UK rollout to follow shortly after. UK market leader Sage promptly indicated that it would refer the launch to Europe's Competition Commission, which has already fined Microsoft for monopoly abuse (see story top left).

Managing director Peter Stobart was quoted as saying that Microsoft would be 'leveraging a quasi-monopoly position in one market to give a very strong foothold' in another. The UK market was shaken last month by the scrapping of local editions of Intuit's Taxcalc and Quicken products.

**In the firing line... Accounting Plus**

The Taxcalc brand has now been bought by a company called Assured Solution Providers (ASP), which offers rival self-assessment software called Taxchecker. Intuit says it will help develop converters to export Taxcalc 2004 data to ASP's product.

ASP will launch Taxcalc 2005 with features familiar to existing users, said chief executive Tracy Ebdon-Poole. She claimed: 'This will make ASP the leading supplier for self-assessment software in the UK.'

Meanwhile Mind Your Own Business (MYOB), which surely has the most imaginative name in the sector, announced new versions of three small-business products: Business Basics (£79 inc VAT); Accounting (£233.82 inc VAT) and Accounting Plus (£351.32 inc VAT).

● See page 74 for a review of MYOB Accounting Plus 14.

# ...as Gates prepares security product

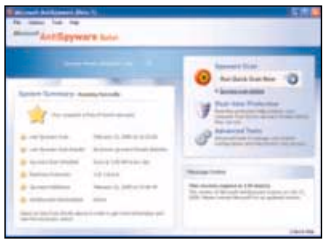
Microsoft appears to be getting ready to launch a product to combat both viruses and spyware, after buying three companies working in the field.

It has just launched trial beta code of an anti-spyware product, available for download at www.microsoft.com/athome/security/spyware/software/default.mspx. This appears to be mature code, unsurprisingly as it is based on a respected product from Giant Company Software, which Microsoft bought in December.

Last month Microsoft bought email security specialist Sybari, a few months after buying Romanian anti-virus specialist Gecad. Security products are attractive to Microsoft because they offer continuing revenues: users are willing to pay for regular updates. Any Microsoft product would be scrutinised by competition authorities.

But security is an area where third parties may have an advantage. Some users may balk at paying Microsoft for protection against holes in its own software and rogue coders appear to be making a point of targeting its anti-spyware beta. Anti-virus companies gleefully reported a Trojan that attempts to bypass it.

There was fighting talk from Symantec, which has for years sold products that fill gaps in Windows, only to see Microsoft copy the functionality in later versions. Chief executive John Thompson said he did not plan to go whining to the US Justice Department about Microsoft's monopoly. 'I'd rather fight Microsoft in the marketplace, because I'm sure we'll whip them.'



**Microsoft's anti-spyware beta is already a target for hackers**

## Windows Server 2003 'is more secure than Linux'

**Microsoft code is more secure than Linux, according to a fan of the open-source operating system.**

**Richard Ford, from the Florida Institute of Technology, compared the time it took to patch three reported vulnerabilities in both Windows Server 2003 and Red Hat Linux, which showed the latter to be much more vulnerable. Windows was ahead each time, with an average of 30 'days of risk' compared to 71 for Red Hat.**

**Ford told the RSA security conference in San Francisco: 'I am a huge Linux fan... the first time I saw the statistics I thought someone had mucked about with my database.' But he agreed hackers are more likely to target Windows.**

**Iain Thomson**



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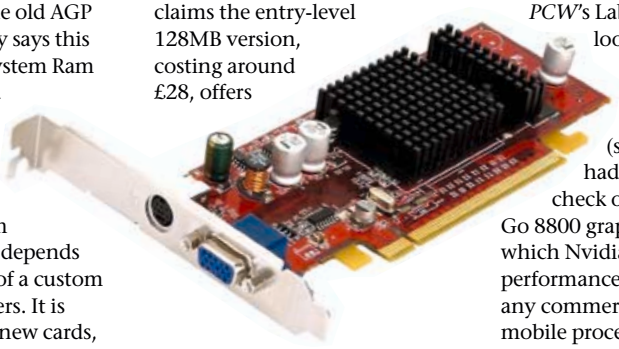
# Fast bus to cheap graphics

ATI is using the speed of the new PCI Express bus to exploit system memory for a new range of fast, low-cost graphics cards.

The standard 16-channel Express graphics bus can pass 4Gbytes/sec in each direction, compared with the 2.1Gbytes/sec total bandwidth of the old AGP bus, and the company says this allows a card to use system Ram rather than dedicated on-card video memory without an intolerable performance hit.

ATI calls the system hypermemory and it depends on the combination of a custom chip and special drivers. It is implemented in two new cards, called the Radeon 300SE 128MB and the Radeon 300SE 256MB. The first, despite its name, has 32MB of onboard memory and the second has 128MB – the other capacities refer to the exterior Ram used, and this is grabbed only when needed.

The cards will be sold initially only to system builders, though they may be made available in shops if there is a demand. ATI claims the entry-level 128MB version, costing around £28, offers significantly better performance than the integrated graphics on Intel's latest motherboards, and outperforms Nvidia's Geforce 6200 with 128MB of Turbo cache.



**The Radeon 300 SE uses system Ram via PCI Express bus, rather than expensive onboard memory**

ATI has also just launched a 512MB version of its Radeon X850 board, and Simon Crisp in *PCW*'s Labs managed to get a look at its latest Radeon X700 mobile graphical processing unit (see box below). He hadn't had a chance to check out the rival Geforce Go 8800 graphics processor, which Nvidia claims has a 3D performance 'unmatched by any commercially available mobile processor'.

The 8800 is used in Dell's Inspiron XPS Gen2 multimedia notebook.

## First look at ATI's new mobile graphics unit

**The latest mobile PCI-E GPU from ATI, the Mobility Radeon X700 (codenamed M26), is aimed at an ever-growing market segment, the thin performance notebook and, as you may have guessed from the name, the MR X700 is based on its desktop cousin.**

**The 0.11micron M26 core features the same eight pixel and six vertex pipeline architecture as the desktop X700. It also has the same ATI Powerplay 5 power-saving technology as its larger sibling, the Mobility X800. Powerplay includes clock gating and DLCS (dynamic lane count switching), an interesting technology that reduces the number of PCI-E lanes being used by the core according to what's being demanded of the graphics subsystem, and so reduces battery consumption.**

**ATI has held the MR X700's core speed down to 350MHz – 70MHz slower than the desktop chip; the 128MB of memory runs at 350MHz DDR (700MHz effective), which, with a 128bit memory bus, gives a peak memory bandwidth of 11.2Gbytes/sec, but this figure depends on how the graphics are implemented in any given notebook. Simon Crisp**

# Emphasis on security in new laptops

HP, Dell and Toshiba pushed security rather than performance in their new year launches of notebooks, although most were based on Intel's latest Sonoma flavour of its Centrino mobile platform.

Toshiba has three new ranges, the Portégé M300, the Tecra M3 and the Tecra A4, boasting a system called Easyguard aimed at securing data and easing diagnostics.

HP announced seven laptops in the 9600, 8200, 6200 and 4200 series for the UK market, all using Sonoma, and the first designed by the company since integration with Compaq in 2001.

**Tablet PC sibling of HP's nc4200 (left) will not be sold here**

HP launched a Sonoma-based Tablet PC, the tc4200, in the US but it will not be generally available in Europe because of low demand; HP's tc1100 will be the only HP tablet available here until late next year.

Dell launched three Latitude notebooks and two Precision mobile workstations. New features include Trusted Platform Module security technology and integrated smartcard readers.

There are details of all these models on our website – search on the manufacturer or model.

AJP announced a Sonoma laptop, the Z71A, with a 15.4in widescreen selling for £880 (inc VAT) complete with a DVD-RW drive and memory-card reader. Elite announced it would be showing five new Sonoma models at Cebit in March.

### >> Light relief

Philips has unveiled a new range of flat TVs with HDMI and DVI-connectors that enable them to double as monitors. They include the 32PF9380, 37PF9380, with 32in, 37in and 42in displays respectively.

All three feature a memory card reader, 802.11g Wifi and support for high-definition video. They also offer Ambilight 2, which surrounds the screen with colours similar to those being displayed (see picture above).

Philips says this eases eyestrain and makes the display look larger. **Rory Reid**

### >> Turion chipset

Via has unveiled a low-drain chipset, called the K8N800A, optimised for AMD's yet-to-be launched Turion 64 mobile processors. It includes S3 Graphics Unichrome Pro graphics.

### >> Light and loud

Interlink has launched a portable public-address system called Go Speak that can be used for presentations and other events. The twin speakers weigh 2.7kg and

can deliver 40w – and if that is not enough, you can daisy-chain them for larger venues. They cost £245.57 (inc VAT) from http://uk.insight.com.

### >> Quiet cool

Scythe's FCS-50 cooler can be fitted to most processors, except those using Intel's latest 755 socket. Its clever use of a heatpipe and flow-through technology allows it to be used for overclocking or keeping your PC quiet. It costs £45.38 inc VAT from Quiet PC. www.quietpc.com/uk



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# New rival arrives for the Pentium

**The Cell processor developed by IBM, Toshiba and Sony may not quite justify the tag 'supercomputer on a chip', but it could have Intel watching its back. Clive Akass reports**

The latest in a long line of processors attempting to overthrow the dominance of the classic PC x86 Intel chip architecture has been unveiled by its joint developers, IBM, Sony and Toshiba.

The Cell processor which will power Sony's Playstation 3 console when it launches next year, has a novel architecture (see below) and has been described as a supercomputer on a chip. Toshiba will use it in a smart television and IBM plans to build a workstation round it.

The designers say it has 10 times the performance of today's Pentium 4, which might make it as powerful as a supercomputer of a decade ago but can hardly compare with modern versions that use scores of x86 processors.

And what about performance in real-life applications: would the Cell really outperform a Pentium 4 when both are running Windows?

We don't yet know. The Cell is said to be capable of running several operating systems at once but no information is given on how fast or how usefully. Linux is the only one mentioned as actually running on it.

Previous x86 competitors, though worthy, have had little impact on Intel. Digital's Alpha chip and IBM/Motorola's PowerPC remain relatively niche products. Acorn's Risc architecture died at the desktop, though it has had a strong afterlife in low-drain ARM cores for mobile and embedded devices – including those using Intel's Xscale processors. Intel's own Itanium is floundering.

But computing is changing and the disruptive potential of the Cell cannot be dismissed. Intel's architecture has a lot of baggage to carry to ensure backwards compatibility.

Desktop Linux is getting a lot friendlier, and is not locked into x86. Neither are alternatives to Microsoft's office applications, in which there is increasing interest from organisations anxious to cut software maintenance fees.

Games consoles have a big market and, given office applications, could easily begin to challenge PC dominance; so could computers disguised as televisions, like the one planned by Toshiba.

Resurgent Apple is showing that Windows is not the be all and end all of desktop computing and there is speculation that the MacOS will be ported to the Cell (not to mention to x86 – see page 16).

The Cell is also said to be more power efficient than Pentiums, allowing quieter, cooler computers. And, ironically, its network savvy (see below) could enable it to take better advantage of the fast links promised by Intel's latest photonic technology.

Certainly Intel will be eyeing it warily. As former chairman Andy Grove was fond of saying: 'Only the paranoid survive.'

## Nine-in-one chip takes soft option on caching

The Cell architecture provides an interesting contrast with the emerging generation of dual-core x86 chips from Intel and AMD that are essentially two general-purpose processors in one silicon module.

The Cell is in effect nine computers in one: a 64bit PowerPC core linked by a fast internal bus to eight satellite computers, each with its own local memory called a local store (LS) and optimised for multimedia processing. These are called Synergistic Processor Elements (SPE).

The PowerPC core does some computation itself and farms out work to the SPEs, rather as a server might farm out processing to machines on a network. It has for this reason been likened to a network on a chip, and this ability to distribute processing can extend across an external network, priming the Cell for grid computing.

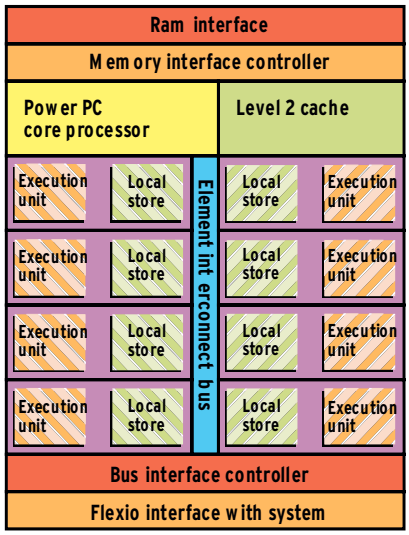
The local store of the satellite processors is roughly equivalent to the internal cache of an x86 processor: it minimises delays by holding, as close as possible to the processing unit, the instructions and data deemed to be required next.

A Pentium dedicates a lot of processing power to deciding what to fetch, when, from the Ram, and the order in which to process it: there is no point in attempting a calculation that requires as its input the result of another one that has yet to be performed.

On a Cell this work appears to be shifted to the software though the role of PowerPC core is not yet entirely clear. The performance is therefore even more dependent on the standard of the coding.

The SPEs are Single Instruction Multiple Data (SIMD) processors, designed to perform a single operation on multiple data, taken in 128bit chunks split into four 32bit words.

Cells have 234 million transistors, nearly twice as many as a P4, and will clock 4GHz. They will be made on a 90nm process initially but rumour has it they will progress to 65nm.




**This image of the new Cell processor shows some of the structures in the simplified block diagram on the right. The PowerPC communicates with its satellite Synergistic Processor Elements (SPEs – coloured mauve) via 512KB of Level 2 cache, and what is called an Element Interconnect Bus capable of passing 96bytes per clock cycle. Access to external Ram is via a memory interface controller and a Ram interface conforming to a new Rambus XDR standard allowing traffic at up to 100Gbytes/sec.**

**Each SPE has a local store of 256KB and can address external memory directly. This gives the processor more than 2.5MB of on-chip memory (there is an unknown amount of L1 cache on the PPC core).**

**The device communicates with other system components though a Bus Interface Controller and another Rambus technology: Flexio. Not shown in the block diagram, tucked in next to the PPC core, is what is called a 'pervasive test and debug' unit.**



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# Laptops to run off net

Notebooks could be powered from hotel and company networks within a couple of years, avoiding the need to carry adapters.

A Power-over-Ethernet (PoE) standard (802.3af) was ratified two years ago but it provided a power of only 15w. Now a group set up by the IEEE standards body is studying whether to push this to 30w or more.

A key mover of this initiative is Powerdsine. Chief executive Igal Rotem said it is expected to be approved in June, but products would not appear for at least 18 months after that. Rotem reckoned standard Cat5 cable is capable of carrying 60w at the PoE's standard 48v. 'It is not the cable that limits how much power can be carried. It's the contacts on the RJ45 network plug,' he said.

Notebooks would have to be PoE compliant to take advantage of it, though bridge products are sure to appear if it does go mainstream.

PoE is currently restricted to the enterprise and is still costly, but, says Powerdsine, some 160 devices have been certified as compliant. It simplifies installation as only one cable is needed, which is useful where devices have to be sited away from power plugs. Powerdsine has just launched a product that tests networks for PoE capability.

PoE is currently the only global DC power standard and the RJ45 the only global power connector. The industry has yet to come up with a smart power supply that will deliver whatever a device asks for, even though it could be done with known technology.

## Hard look at log-ons

**Imprivata has come up with a hardware answer to the problem of keeping track of log-on details for different services. It's an appliance called Onesign that learns authentication behaviour and it can be set up for 2,500 users in just four hours, the company claims. It costs €15,999 (£10,300 approx) for 200 users. www.imprivata.com**

## >> Digital pen

A new digital pen from Logitech is designed for companies that wish to capture information electronically and on paper forms at the same time. The IO2 pen allows staff to fill in forms manually but also digitise the information and send it to a Bluetooth-enabled device for processing. It costs a £149.99.

## >> Fast card

Twinmos has launched a high-speed 2GB Ultra-x SD card that can be read at 10Mbytes/sec and written at 7.9Mbytes/sec. www.twinmos.com.

DrayTek Voice-over-IP Solutions

DrayTek's award winning range of broadband routers and firewalls now supports Voice-over-IP (VoIP) facilities, enabling you to make use of your broadband line for voice calls instead of using your regular phone line.

Phone ports on the Vigor routers allow you to plug in a regular telephone and make calls to other VoIP users or, via the *DrayTEL* gateway, to anyone on a regular telephone line (fixed or mobile). You can receive calls too; either over the internet or via your personal *DrayTEL* phone number.

DrayTek Vigor routers are available for ADSL, Cable-modem and ISDN users - visit the web site to see the extensive specification of each model and select the ideal router for your own requirements.

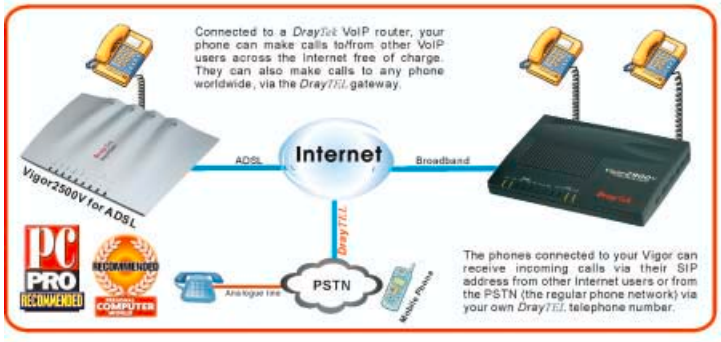
Now available for cable-modem users, the **Vigor2100VG** is a router with VoIP, internet sharing, firewall and 802.11g Wireless LAN all at a great price, ideal for home users with **NTL** or **Telewest** broadband - check out full details of this exciting new product on our web site.

NEW!

As well as VoIP, the Vigor router range has its regular feature-rich specification: The high performance firewall with URL content filtering, DoS protection, time scheduling, plug-in blocking and user-defined filtering all helps keep your network secure. Other features include virtual LAN, Ethernet port throttling, extensive reporting methods and an easy to manage user interface.

**DrayTek VPN & Secure Wireless**

The Vigor's famous VPN facilities enable easy to set up and secure site-to-site or teleworker tunnels to be linked, featuring 3DES/AES encryption and up to 16 simultaneous VPN tunnels. Wireless LAN (802.11g with WEP/WPA security) means that your portable/wireless devices can access the router facilities just as easily as your wired clients.



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# Letters

## Veni, Vidi, Ipod >

In Rory Reid's 'evolve or perish' column on the Ipod (*PCW* April 2005), he fails to acknowledge two factors that put the Ipod in its strong position: the user-friendly design and interface (of both the Ipod and Itunes), and the 'ecosystem' of third-party accessories that has exploded around the Ipod. Unless a rival player can outdo Apple in both these areas, its lead will be unassailable. Brand power and marketing do help, but the Ipod has both style and substance.

**John O'Brien**

**Kelvyn Taylor replies > The Ipod accessories market is certainly healthy – turn to page 64 for a round-up of the best.**

## At a loss>

When British banks declare huge profits, financial commentators ask: 'Would you rather they made a loss?' Think of the effect on the economy of banks on the verge of collapse.'

I think a similar argument applies to our beloved Microsoft. It makes the leading operating system and leads many markets in applications software and makes huge profits, but what if it led the markets and made a loss? What would happen when major bugs and security flaws emerged? How quickly would it respond? Individuals and companies are quite willing to favour its products over competitors, so its prices cannot be excessive. I'm sure it knows of price points which would provoke competitors to enter the market and it must be nowhere near these, as many serious competitors are offering open-source software for free.

In my case, I have handed over £60 to Microsoft to have XP loaded on my hard drive. A very competitive rate compared to some of the Linux offerings. In view of its speed of response and the wide availability of applications I think that is value for money.

**Neil Hardy**

## Photo heaven >

As a keen photographer, I love digital photography for its versatility and immediacy, but worry about the apparent ease with which all my pictures could be lost with just a minor problem on the storage medium.

I've therefore purchased a couple of gadgets. The first is called the Image Tank and allows the contents of a card to be transferred to its internal hard drive without the use of a PC. Being battery powered it can be used anywhere and having a backup copy of my pictures while travelling gives me a more secure feeling.

I also saw in Schipol airport recently a device called the Copy Box, which I just had to have. This enables two USB storage devices to be plugged in and the data copied from one to the other. It has now become a constant companion to my digital camera, being used to transfer images to cheap and cheerful USB memory sticks.

Of course once they are home, the images can be archived securely. But I have also got

**WIN!**

**The author of the Letter of the Month will win a Logic3 I-station.**

**With a powerful 12w sub-woofer and a 3D surround-sound processor, the I-station is the perfect accompaniment to Apple's Ipod. What's more, you don't have to own an Ipod to make use of these speakers since they're capable of linking up with any mp3 player. The I-station runs off either an AC adapter or four AA batteries, and will even charge your Ipod when you use it. For more information on the I-station go to www.logic3.co.uk.**

## Letter of the month

### Centers of excellence? >

**I enjoy building PCs, playing with different versions of software and transforming my PC for different roles. I've long had a keen interest in using my PC as a personal video recorder (PVR) and enjoying the whole digital home experience.**

**Currently I use my PC as a PVR but my domestic DVD player needs replacing and I'm now looking for a PVR/DVD player for my lounge. I could build my own but there are objections from family members about a PC in the living room, so this is an interesting time to compare the offerings from PC suppliers and traditional brown goods suppliers. Recent *PCW* reviews show that the PC suppliers are right on the button with digital TV tuners, large disks and built-in DVD recorders, but the prices – wow! For a good-looking unit we're talking £1,000-plus.**

**Sony has recently launched a 250GB hard disk video recorder that you can buy almost anywhere for £600-£650, but it only has an analogue TV tuner. Toshiba is reportedly bringing out a 160GB unit with a digital TV tuner, built-in DVD recorder/player and will be competitively priced against the Sony. These are very good-looking units and although not able to do everything a Media Center can, they do fit the domestic market for the majority of purposes.**

**Who's going to buy a Media Center at this price? Part of me would like to buy what is a PC at heart, but the price premium makes this a no-brainer. To survive in this market PC vendors need to slash their prices. The Sony and Toshiba devices aren't Windows based but, as we know, for something that sits in the living room this can only be a good thing.**

**Graham Smart**

**Kelvyn Taylor replies > Media Centers are coming down rapidly in price, but the brown goods manufacturers are good at fighting back – the choices are going to get harder, which is why we'll be keeping a close eye on developments in the digital home market.**

hold of a Sandisk device that connects to the TV and allows the camera card to display images directly on the screen without a PC. This can do slideshows, but an optional Compact Flash card can also be left in the device to hold up to 2,000 images transferred from the camera cards. It has proved so popular that various members of my family have bought their own.

Maybe I ought to be as fastidious about backing up my general data as I am about my precious images.

**Paul Casey**

**Kelvyn Taylor replies > You're right that most people look after their photos a lot better than their other digital data, but there's nothing to stop you using the same devices for general data backup. We reviewed the Copy Box in April's *PCW*.**

## Security alternatives >

You give considerable space in your home security feature (*PCW* April 2005) to describing the BT Home Monitor system.

You will find a superior system, the Yale HSA3500, available online for around £200 (or less on Ebay). It has all the usual wireless sensors (PIR and magnetic contacts) and alarms (internal/external siren, strobe lights) but has two outstanding advantages – no monthly subscription and superb after sales service with a national-rate helpline.

All the available add-ons such as emergency alert watch, fire alarm, extra keypad and keyfobs are totally wireless. Security zones can also be set up.

On activation, the control box (which is also a hands-free telephone) phones down a list of six mobile or landline numbers until it gets a reply and passes an appropriate message. The recipient then presses 1 and has full voice communication with the scene.

I have no connection whatsoever with Yale, but I have installed two of these systems in our neighbourhood with another two in progress. I received excellent service from Yale with a problem caused by myself.

**Jack Lavety**

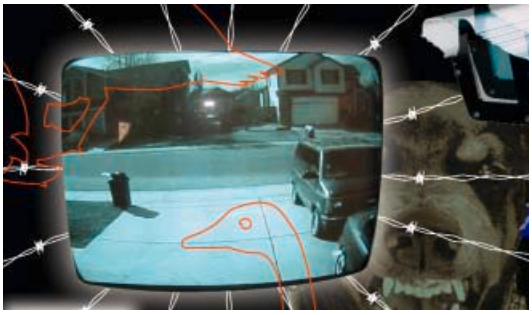
## MSI's tarnished Diamond >

There is a growing discontent regarding the motherboard manufacturer MSI and its flagship motherboard K8N Diamond.

MSI has been hyping this product for months, widely advertising its unique Dual Net card that provides combined Bluetooth and 802.11g Wifi capabilities. Thousands of people all over Europe pre-ordered this after reading the specification on the various MSI websites. MSI has set up a 'Diamond Club' for buyers, to offer them a unique level of service and support for this flagship device.

In February the motherboards started to arrive to European customers, but when it arrived the Dual Net card was missing from the package. This situation has all the makings of a PR disaster. Setting up the 'Diamond Club' rubs salt into the wound.

**Dave Shepherd**



**The Yale HSA3500 could be a good alternative to the BT Home Monitor system**

**Kelvyn Taylor replies > We originally posted this letter on The Test Bed (www.pcw.co.uk/labs) and received a reply from MSI UK that it wishes to contact all UK purchasers in order to resolve the problem. Any UK reader who has purchased this board and has a complaint should email k8ndiamond@msicomputer.co.uk with their details. According to MSI, correctly labelled products are now being shipped to UK resellers. To clarify, the Dual Net card is not offered as an option in the UK.**

## Penguinspeak >

What a load of cr*p! Have you gone totally mad? There is no point testing and comparing those PC notebooks! They all suck dodo! They have no OS. What part of 'Windows sucks and cannot be fixed' are you missing? The Registry is the core of the system and is absolutely indefensible. Service Pack 2 has proved that beyond a doubt! Oh, and by the way it is FAILING! Why have nearly all European Governments turned to Linux? HELLO!?

Not only does the Windows OS render these notebooks useless garbage, but unlike desktop PCs, they most likely cannot be saved with a Linux or BSD conversion. Please end your ignorance and catch up!

**Name withheld**

**Kelvyn Taylor replies > We've printed this letter in almost unedited form to highlight the level of animosity against Windows shown by some Linux users. Reasoned debate? We think not. Regarding the relative security of the two platforms, there's a commentary by a security expert online at www.pcw.co.uk/news/1161323. For those interested in Linux, we'll have a group test of personal distributions next month.**

## Cover disc interface >

After reading the letter from Bob Harvey in April about the disc interface invoking Internet Explorer, and Chris Wiles' reply, I decided to investigate further. What I found was that the ierunner.exe program makes use of a file called browsercheck.htm which brings up the file warning.htm in my browser. The content of this file is quite enlightening as it makes no mention of the supposedly built-in webcore HTML code within Windows. All it invites you to do is to download Internet Explorer 6 from Microsoft if you do not already have Windows XP installed on your computer. I seem to remember that *PCW* used to have its own standalone launcher program on the cover discs. This seemed to work well enough as long as you were using Windows on a PC, with no need to have an installed browser of whatever pedigree. To restrict access to the cover discs still further by making use of Microsoft proprietary code seems like a backward step.

While I understand the need to provide an interface for the cover discs, assuming that readers have Windows XP installed on their computers is merely encouraging Microsoft's monopoly. I, and quite a few others, do not have Windows XP installed and have no intention of doing so. I will continue to rummage through the cover discs with Windows 98 running Mozilla Firefox, Adobe Acrobat Reader and now Opus Directory (now that I can ditch Windows Explorer – thanks for that).

**Tony Moran**

**Chris Wiles replies > Since Windows ME, it's been almost impossible to totally uninstall Internet Explorer, since the built-in HTML engine that's part of the IE installation is required by third-party applications. As the vast majority of Windows PCs have this HTML engine, it makes more sense to use this than an alternative that could cause conflicts across machines. Generally speaking, it is an interface that works and you don't need Windows XP to use it – the interface works in 98SE, ME and 2000. We've supplied the same disc interface for two years, and it was HTML-based for some time before that. Nothing has changed – although in this issue we've redesigned it to bring it line with the new *PCW* website, plus we've improved the compatibility issues with third-party browsers.**

## Clarifications >

- Several readers have contacted us about the apparent one-year limitation on the cover disc version of Ability Office Basics (*PCW* April 2005). The activation process is something that applies to all new Ability Office products, but we would like to reassure readers that activation can be renewed indefinitely on a yearly basis and that the software is in no way limited.
- In the April issue, three of the pictures on page 72 (configuring a wireless network) were not printed. We apologise for any inconvenience caused – you can find a pdf of the page at www.pcw.co.uk/wirelesspdf.

**Unless otherwise stated, letters sent to the editor, PCW team or contributors will be considered for publication. Letters may be edited for clarity or length. Views expressed are those of the author and not necessarily those of the editorial team. If you wish your letter to be considered for the monthly prize, please include a full postal address for delivery. An email address alone is not sufficient.**



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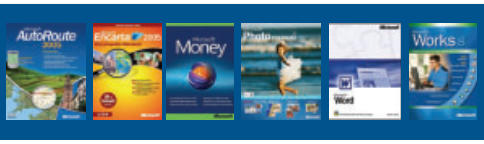

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- Wireless Intel Mini PCI 802.11bg (54Mbps) LAN
- Built-in SD card reader
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- 8 cell Li-Ion battery (life up to 2.5hrs approx)
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# Obey the law, with its portable flaw

**Portable media players have created more pirates than Penzance, albeit unwittingly. Gordon Lang explains**

gordonl@pcw.co.uk

In this month's Hands On Hardware, I've explained how to encode videos for use on a personal digital assistant (PDA). The results, especially on models with high-resolution VGA screens, can be nothing short of spectacular.

But content is ultimately what counts. For this article, I've used a wedding video as source material but, let's be honest, what you really want to know is how to get your DVD movies on to your portable. After all, you're not showing it to paying customers, have no intention of sharing it on a peer-to-peer network, nor burning pirate copies and selling them from a car boot. You just want to enjoy the movie you bought, in whichever environment happens to be most comfortable and convenient.

Unfortunately, copying a DVD movie onto a portable media player without permission from the content owner breaks UK copyright law. Consequently, no publisher can tell you how to do it without incurring a risk of inciting copyright infringement and landing into potentially serious legal problems.

But surely you'd argue that ripping a DVD on to a hard disk – be it for use as a video jukebox or transfer on to a portable – is no different from ripping CDs for an Ipod or any other portable music player. Truth is, it isn't any different. Under the same UK copyright laws, it's equally illegal to make a copy of an audio CD without permission as it is a DVD. Whether you have to circumvent a copy protection system or not, you're still making an unauthorised copy, which in the UK is a civil offence.

**'It's equally illegal to make a copy of an audio CD without permission as it is a DVD'**

I had originally contacted the UK Patent Office to see if there was a legal way to watch DVD movies on my PDA and came off the phone understanding that not only is this an offence but that most Ipod owners are technically breaking the law, even if they never download a single copied track. The law can be read at **www.legislation.hmso.gov.uk/si/si2003/20032498.htm**.

Of course, most people know there are exceptions, such as photocopying a newspaper article, for instance. Then there's the oft-quoted 1984 Betamax case, where the courts ruled that it's OK to record a TV broadcast for later viewing, as long as it's erased afterwards (no naughty archiving now). But neither exemption applies to copying audio CDs or DVD movies for what's considered private enjoyment. Contrary to popular belief, you're also not allowed to make backup copies of audio CDs or DVD movies in the UK either, only of an operating system or software application disc.

So where does that leave the flood of portable audio and video players on the market? Are Apple and Microsoft inciting copyright infringement with Ipods and Portable Media Centers? Apparently not: there are legitimate uses for the products in question and it's up to us to use them responsibly. It's no different from car manufacturers that produce products which can go very fast, but don't take responsibility for reckless driving.

Legitimate content for use on a portable media player could include music or movies downloaded from a commercial store, recorded broadcasts and, of course, self-authored material such as a holiday video. Trouble is, while online music stores have finally got their act together, where's the legal video content I can buy for my portable? The selection on Cinema Now hardly inspires. Microsoft says I can 'watch all my favourite movies' on a Portable Media Center, but where exactly can I get legal versions of *Goodfellas* or *Star Wars*?

Microsoft's answer is to record them from a TV broadcast, although you'll need to delete them later to comply with the timeshifting provision. Microsoft also points out a number of new content deals with MTV and various news and sports agencies, although these are currently only for the US market. The fact is, there really isn't much compelling video content legally available for portable media players, so you're faced with only watching TV recordings, personal holiday videos or taking the law into your own hands and ripping a DVD.

Realistically, would a record company or movie studio go to the expense of suing an individual for copying a handful of titles? They've so far focused their efforts on preventing mass piracy or illegal distribution. Only you can decide if it's a risk worth taking.

Ultimately, we need realistic legal options for watching movies on portable media players. If the studios won't allow us to make a copy, then why not include a compressed version on the DVD for use on portables? After all, some audio CDs already come with a duplicate of the album pre-encoded in mp3. More sensibly, the studios should sell portable versions of their content. The success of online music stores has proven we're not a nation of pirates.

We can only hope the studios learn from the mistakes made by the music industry: embrace new platforms and content delivery or risk an epidemic of unauthorised copying. People will undoubtedly buy portable media players with the intention of watching movies on them – they should be allowed to do it legally.



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# A mishap cum happenstance

## Kelvyn Taylor discovers that splurging on an annual motherboard upgrade can really boost performance

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Even after many years of building and testing PCs, some things still take me by surprise. A few weeks ago, I managed to destroy my motherboard by not taking care when plugging the 3GHz Pentium 4 Northwood CPU into its socket after a routine spring cleaning. I actually thought I had destroyed the processor, since one of the pins had bent and shorted out a couple more, but a quick check showed it was still alive and well.

So, I had to find a new motherboard to replace the two-year-old Intel 845E-based model I had fried. The 845E was a shortlived oddball chipset that supported 400/533MHz front-side bus speed and DDR memory. It had done sterling service, with no failures or problems, and had pretty well all the features I thought I needed.

But now it was history, so I had to bite the bullet. Due to a limited budget, I ended up with a reasonably priced board based on the much more recent – but hardly cutting edge – Intel 875P (Canterwood) chipset. This offers dual-channel DDR memory support, a Sata controller and IDE Raid capabilities, plus other useful goodies, such as Gigabit Ethernet, Firewire and multichannel integrated audio, yet still cost less than £85 including VAT.

After installing it, Windows XP presented me with the customary blue screen of death, so a repair install of XP was required. As an aside, if you do this use a slipstreamed XP installation CD that incorporates whatever service packs you have currently installed. I used a Service Pack 1 slipstreamed CD on a system that had been updated to Service Pack 2, and it caused me no end of grief with components and drivers. To see how to create a slipstream CD, do a web search for the term. There are plenty of sites with information on the procedure.

Anyway, after the system was up and working and a few drivers reinstalled, I benchmarked it using the Cinebench 2003 benchmark (a free download from www.cinebench.com) and found, to my surprise, that I had gained about 25-30 per cent extra performance from the CPU and Open GL tests, indicating there had been some significant processing and graphics bottlenecks in my old system. Cinebench tests the performance of your CPU/memory subsystem and your graphics card, so the prime suspects on my old setup were the single-channel DDR266 memory controller and the 4X AGP graphics bus. I didn't change the memory or graphics card during the upgrade, but I had been using DDR333 memory and an 8X Geforce FX9600 Ultra AGP card all along, both of which were obviously running less than optimally.

Other benchmarks I ran told the same story, and my PC was noticeably more perky, particularly for graphics-intensive applications such as games, where my graphics card could now get data from the CPU as fast as it needed rather than being hamstrung by a 4X AGP interface.

I wasn't surprised to get some extra performance, but was very surprised at just how much extra I got. In the past when I've been making upgrade decisions, the motherboard is usually the last thing to go as I've never really viewed it as making as much difference as the more obvious components. Yet I'd now argue that the first thing you change should be the motherboard – not only will you add extra capabilities, such as Sata support or Gigabit Ethernet, but you might save yourself forking out for a much more expensive CPU or graphics upgrade.

There comes a point when you have no choice but to upgrade the motherboard; for instance, to accommodate newer CPU sockets or PCI Express cards. But I reckon it's worth the cost of an annual motherboard upgrade just to make sure you get the best possible use out of the other components that make up your PC.

**'I've never viewed the motherboard as making as much difference as the obvious components'**

My next major upgrade will be in 9-12 months, when we start to see Intel's first generation of multiple-core processors, such as the Smithfield dual-core desktop CPU. That's a development that really excites me, as I've always been a great fan of multiprocessor systems.

If you've never used a dual-processor PC, you should give it a try. If you've got a Pentium 4 with Hyperthreading you might have noticed an improvement in the responsiveness of your PC when running multiple tasks, but it's only a pale imitation of the real thing. With software that's designed for multithreading – and an increasing number of new applications are – your system can really fly. It's hard to describe, but it's a bit like having a diesel car with massive amounts of torque: whatever you throw at it, it never bogs down.

At work I run half a dozen applications with several processor-intensive background tasks, such as virus protection and Seti@Home running, yet my humble four-year-old dual 1GHz Pentium III actually feels much more nippy than the home system I've described above. Yes, it's hopeless for gaming or video playback, but for normal office applications it's magnificent.

So I can't wait to get my hands on a two-way dual-core Smithfield system if such a beast ever appears, even if it's just for the satisfaction of opening up Task Manager and seeing four CPU graphs on display. Of course, the downside is that there will then be twice as many opportunities for me to break my motherboard.



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# As good as it gets, but could be better

Barry Fox wonders why, after 20 years, Windows still lacks the kind of intuitive functionality users need

Jazz bass player and pianist Red Mitchell used to sing a song he wrote, *Simple Isn't Easy*. It had a catchy tune and clever lyrics. The gist of the song was that it is hard to play music that sounds easy on the ear, and a lot easier to create a barrage of notes that sound clever but are instantly forgettable.

It's the same with computer software. It has been easier for developers to keep hanging more and more new features onto an old creaking structure than it is to create a logical structure that makes it easy for people to do the things they most often want to do.

Instead of responding to years of ridicule by making manuals more coherent, we can now either use Help files that often don't help, spend at least £20 on a book or waste a ream of paper and a complete ink cartridge to print out massive pdf files that will fill a thick ring binder. The outcome is that much of what we now do with a PC is the result of trial, error and happy accident.

Several readers have been grateful that I found out by pure chance how to load any old obsolete Word Pro file into Word without cluttering the screen with garbage from unrecognised control characters. Just select 'Recover text from any file'. Now all I have to do is find out how to stop Word resetting plain text to font sizes that are too small, despite my preferred default settings. What I want is for Word to ask me a simple question. What font do you want until you click here to change it?

I also know what I want when twiddling thumbs and biting nails while the hard disk light is flashing, the cursor is flickering and typed text takes several seconds before bursting onto screen. The processor is clearly doing something very clever and demanding in the background, which is slowing everything else to snail's pace. I suspect Iomega Backup is my personal culprit. But why doesn't it tell me, like Norton does when scanning new text files for virus infection?

Yes, I know that experts can use Control-Alt-Del to get Task Manager on the screen and then click Processes. But the list of programs can easily top a hundred and there is no plain English advice on how important they are.

After 20 years of Windows is it really too much to ask for a simple pop-up that tells when the processor is too busy to work properly, what it is doing, whether it is safe to stop it and how to stop or delay it if it is safe?

When error messages with long codes appear on screen, it's obviously useful to copy or print them at the press of a button for relaying to a support line. In the days of Dos, the Print Screen key dumped a complete image of the screen content to paper. Now we need add-on third-party software with a range of confusing options. Right-clicking to copy or print either does nothing or throws up a useless, 'What's this?'

USB was promoted as plug-and-play, hot-swap heaven. So why when I unplug my USB TV tuner and Corex card scanner, how ever briefly, does XP demand the original installation disc? Why can't XP store all necessary installation files during the first installation? People lose or damage discs. That's the way of the real world.

When Windows asks for a named file from a setup disc, why can't it search intelligently through all folders and directories on the disc, instead of reporting 'file not found' until I use Browse to steer Windows to the right location and click to select?

The stock advice for speeding up a PC is to delete unwanted programs. I deleted WinDVD because I do not use it to watch DVDs. My TV tuner stopped working. All it needed was a warning of knock-on effect: 'If you delete this program the following devices and applications may not work properly.'

> 'Is it too much to ask for a pop-up that tells when the processor is too busy to work properly?'

The information for this kind of warning must all be there in the Windows Registry, if only Windows bothered to use it.

We are also told that a good way to speed up Windows is to delete or uninstall unused fonts. OK. So just give us an option to display fonts that are not being used with the Hint that getting rid of them will safely help performance.

To access patents from the US Patent Office online library you need to install a special flavour tiff reader. Recently, it stopped working. A new version of Quicktime, installed by a movie edit program, had grabbed responsibility for opening all tiff files but could not handle the special flavour tiffs. Intelligent use of the Registry could have popped up a warning or explanation.

Many of these problems would be solved if Windows (and the now absurdly bloated Office) came with a Simple Startup Mode option. Not something as drastic as Safe Mode, which disables disc drives, but a half-way house with the intelligence to learn what programs, features, fonts and settings the user frequently uses, and then load only those features.

Clicking on something not loaded would pop up an option to reactivate. This would lubricate performance and be a troubleshooting boon.

The developers at Microsoft will throw up their hands and say how difficult it would be to implement these. But as Red Mitchell sang, simple isn't easy.



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# Don't ignore the upload potential

**Guy Kewney argues that mobile phone companies are misguided in thinking the future lies in downloading**

I will never forget in 2000 seeing the ghastly image of a burning Concorde – a ball of fire shooting across the Paris sky, heading towards a small hotel. But, when I saw the footage on TV, I was impressed that such film existed at all.

Someone just happened to be filming nearby when the tragedy unfolded. It was either fate or, more likely, the fact that video cameras have become such common personal items that an innocent bystander just happened to be pointing one at the sky when the Concorde met its death. The chance of that happening is now approaching 50 per cent. Indeed, the amount of footage available of the Shuttle disaster shows that this figure isn't far off.

Two hundred years ago, newspapers relied on eye-witness accounts of an incident. A hundred years ago, photographs became the norm, providing a professional photographer could be dispatched quickly. But that changed again about 40 years ago, when, with the advent of personal cameras, an eyewitness could often provide photographs of an event and the aftermath. And today, we are seeing the breakthrough of the camera phone.

Some day, we may find ourselves in a world where everything is recorded by webcams. Where hat-cams – a small mobile webcam that follows the human eye – could record everything the wearer saw. It could store footage in its memory card, which networks could then download for airing later on.

**'In the future we will use our mobile phone to upload instead of download'**

At this year's 3GSM mobile data show in Cannes, it became apparent that the sophistication of today's camera phones could conceivably make this into a reality. There were camera phones with over a megapixel resolution, prototypes of 2 and 3megapixel devices, as well as 6megapixel designs for late this year. I had always believed there was little point in using these types of device, apart from sheer amusement.

But camera phones are extremely useful. In Cannes software developers were showing off a number of ideas running on mobile phones. Some of these are listed below.

- A Nokia series 60 phone being used as a business card scanner. It was simple: you point and click, and the software in the phone sends the image to your service provider, who turns it into text and converts it into a vcf file ready for Outlook to import.
- A video game showing attacking biplanes coming out of the landscape. Not the imaginary landscape of some role-playing game scenario, but the landscape I could see in front of me. They could only be seen in the display of the camera-phone, but when you spotted them, you could shoot them. A few development cycles, and they'll be able to hide behind real objects, too.
- A fax machine in a megapixel camera-phone. Again, the hard work is entering the phone number of the fax machine. Otherwise, point, click and let software turn the data into monochrome pixels.
- A barcode scanner program that runs on any camera-phone, even those with dreadful resolution. Scan the barcode, and you'll either get a menu on screen, or the data will be sent. If the barcode is on a soft drink or a cinema poster, you get the chance to part with money.
- A translator that works by pointing the camera at a document; the image is transmitted to the language service provider, and up on the screen comes a list of possible meanings.
- Using your phone as a mouse. As you move your phone through the air with you hand, software images sent by the camera register changes in the phone's position and then moves the cursor on your PC screen in relation to this.

These ideas were often displayed by several phone software developers. It would appear they have been showing off work-in-progress to each other, and taking inspiration from one another's ideas.

I don't think the mobile phone handset is destined to become the only computer we have. I think for some years yet, the data we get from these imaging products will be what we want transmitted back to the home server.

But I think one thing is clear: the phone companies have got it hopelessly wrong. They're right in imagining we will spend more money with them if we have high-speed data, but they don't understand the way the future will be.

They are planning for a future where we download what they provide: ringtones, music tracks, video clips of goals being scored, and so on. They think like this because they base their ideas on the TV broadcast model, where someone in the centre creates stuff, and everybody else watches it.

But the reality is the opposite, as shown at the 3GSM show. In the future, we will be uploading instead of downloading. We will be sending video clips from our holiday, or faxes, triggering bar-code actions, playing games, and doing who knows what else to generate a high-speed bit stream from our handset.

At Cannes, everyone was talking about high-speed downlink for 3G (HSDPA), and almost nobody was considering the other side of the coin: HSUPA for uploads. I'm betting that at next year's show, in Barcelona, that will be reversed.



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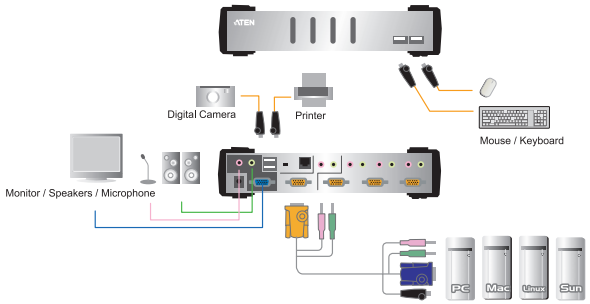


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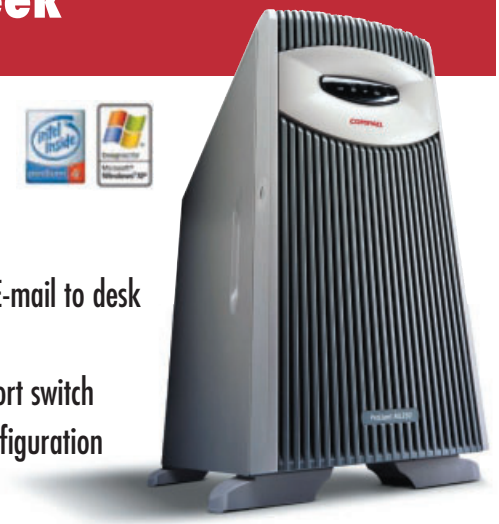

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EDITED BY CHRIS CAIN

EXCELLENT ★★★★★ VERY GOOD ★★★★★ GOOD ★★★★★ BELOW AVERAGE ★★★★★ POOR ★★★★★

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**The next member of the Ipod family is set to be a big hit. Check out our review of the Ipod Shuffle**

PAGE 72

**Asus' Extreme AX850XT PE is one of the fastest graphics cards yet**

PAGE 67

**This is a camera you'll want to be seen with. See page 67 for all the details of the Olympus Mju-Mini**

We've seen new releases in just about every product area this month; from stylish small form factor PCs to portable media players, digital cameras and a handheld games console.

Taking our lead review spot is Shuttle's XPC G5 8300M, the company's first pre-built Media Center PC aimed at those who love the idea of a small system but not the hassle of building one from a traditional barebones box. At just under £1,000 it's a little on the expensive side, especially as that doesn't include a keyboard or mouse, but with the growing popularity of small and quiet systems, we think the concept is a winner.

Another winner is Evesham's latest notebook, which takes full advantage of Intel's next-generation Centrino technology. With excellent performance, wireless networking, a dual-layer DVD writer and PCI Express graphics, the Voyager C510 is great value for money and hails a new era in portable power.

Those who prefer the DIY approach can find the latest overclockable components and accessories in our regular round-up on page 70, plus the hottest new Nvidia and ATI-powered graphics cards on page 72.

This month we also got our hands on Apple's Ipod Shuffle. The tiny flash drive-based audio player is undeniably cute and, despite worries about its capacity, proved a huge hit in the office. At just £99, the 1GB model is particularly attractive for people who want to dip a toe into the world of mp3. If you're already a member of the white headphone brigade, turn to page 64 for our look at the rapidly expanding world of Ipod accessories. Those who want even more multimedia on the move should check out Megaview 566 – MSI's answer to the Windows Portable Media Center.

Dell's 540 Photo Printer will appeal to digital photographers wanting to print snaps at home, while those after a new camera may like the stylish Olympus Mju-Mini and Nikon Coolpix 4800. Also on test is the Nintendo DS – the dual-screen successor to the Gameboy Advance – and the Samsung Z107 3G phone.

Leading our software reviews are new versions of Intuit's Quickbooks Pro and MYOB Accounting Plus, both offering a way for small businesses to manage their finances. Meanwhile, Sonic has released an updated MyDVD and Allume offers a way to speed up your PC with Boost XP. It's all go.



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**Price-crash PCs**
Pick up a complete system for less than £500. See page 103

**Shuttle CR40**
An impressive dual-format DVD writer. See page 69 for a full review

SMALL FORM FACTOR PC

# Shuttle XPC G5 8300M

## A ready built space-saving system for those who want a small yet stylish PC

Just as Hoover is now the universal name for vacuum cleaners, so Shuttle has become synonymous with do-it-yourself small form factor (SFF) PCs. Having stayed loyal to the concept since its beginnings, the company has often been copied but very rarely equalled. To stay one step ahead of the competition, it has now launched its own pre-built machines. The G5 8300M is a Windows Media Center PC perfect for people who want a space-saving system without having to build one from scratch.

Style is as important as specifications when it comes to SFF PCs. With its black aluminium cover and mirrored front panels, the G5 8300M looks the part. The well-built case also features a colourful integrated LCD panel, which displays media information relating to the current mode. It's not 100 per cent essential but adds that extra touch.

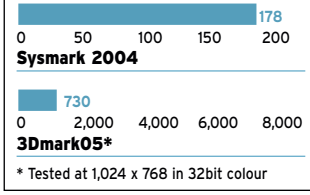
The rear offers more expansion than you'd think possible in a PC of this size, including two USB2 ports, Firewire, audio and PS/2 connectors, while a dropdown panel in the front fascia hides mic and headphone sockets, another two USB2 ports and a 4-pin Firewire port. A remote control is also provided, but it's important to note that the price tag doesn't include a keyboard, mouse or monitor.

The high build quality continues inside with all cables clipped out of the way. The system is based on Shuttle's XPC SB83G5 barebones chassis and features the company's own FB83 motherboard, which uses Intel's 915G chipset backed by the Raid enabled R version of the ICH6 Southbridge. A Pentium 4 530 (3GHz) processor sits in a Socket 775.

The 915 chipset can either use DDR1 or faster DDR2 memory, and Shuttle has chosen to go down the former route with two sticks of 256MB DDR400 Ram set up in a dual-channel configuration. The system can be expanded to a maximum of 2GB via its two Dimm slots. The FB83 motherboard also boasts integrated Gigabit Lan and 5.1 audio.

The Shuttle uses a 250w SilentX power supply and a single cooling fan/heatpipe arrangement to keep the processor cool and the noise down to the bare minimum. When you first turn the system on it's a little noisy, but this soon settles down to a barely audible level.

### PERFORMANCE




* Tested at 1,024 x 768 in 32bit colour

In terms of storage you get a Maxtor 200GB Sata drive, a 6-in-1 USB2 card reader and a Lite-on SOHW1653S 16-speed DVD burner. The DVD drive supports both plus and minus RW formats and can write dual layer discs at four-speed.

To help with media duties there's an Avermedia M1500 Ultra MCE PCI TV card, while graphics are taken care of by an ATI Radeon X300 card. The latter is a PCI Express card device, but isn't great for those looking to play hardcore 3D games at high resolutions. However, it should be fine for occasional gamers who don't mind slightly lower settings. When tested with Far Cry at 800 x 600 pixels and low detail settings, the system managed a more than adequate 73fps.

Although this pint-sized PC comes with Windows Media Center Edition 2005 pre-installed, its Sysmark 2004 score of 178 is comparable with desktop PCs and shows the system is very capable.

All in all, we we're impressed with this well-built and stylish system. If you're looking for a Media Center PC that's perfect for the home office or the living room, it's a tempting choice.

**Simon Crisp**

### DETAILS

**RRP** £945 (£804.25 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Shoe Box Computers 0871 220 1115
**www.shoeboxcomputers.com;**
**www.shuttle.com**
**SPECIFICATIONS**
Intel Pentium 4-530 • 512MB DDR400 Ram • 200GB hard disk • ATI Radeon X300 128MB • Liteon Dual-layer DVD • 6-in-1 card reader • Windows Media Centre 2005 • 2yr on-site warranty
**PROS** Small and stylish
**CONS** 3D graphics; pricey
**VERDICT**
**The XPC G5 8300M is a great start for Shuttle's fully built range**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★☆☆ |
| **OVERALL** | ★★★★☆ |



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CENTRINO NOTEBOOK

# Evesham Voyager C510

## A fast and great-value Sonoma portable

Evesham's debut Sonoma notebook comes hot on the heels of Sony's impressive effort last month (go to **www.pcw.co.uk/products/hardware/1161527** for review). The Voyager C510 is based on the same next-generation Centrino technology, but has a slightly faster processor in the form of an Intel Pentium M 760.

While the system will cope happily with office applications, where it really excels is in the graphics department. The 128MB Nvidia Geforce Go 6600 card absolutely blazed through our 3Dmark05 benchmark, notching up a score of 1,739 – twice as fast as the Sony.

The C510 is stylishly designed with a two-toned silver chassis and plenty of shortcut keys, but it's far bulkier than Sony's ultra-thin system. The 15.4in widescreen display performs well and operates at a native resolution 1,680 x 1,050. A PCI Express card slot sits on the left side, which will come in handy for the new expansion cards.

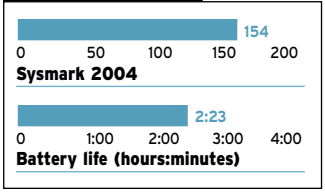
Evesham has opted for a Fujitsu 5,400rpm Sata drive with a capacity of 80GB, but if you want additional high-speed storage, the Panasonic DVD-RW dual-layer drive can be replaced with a second hard disk.

With a total weight of 2.9kg, the Voyager isn't the sort of notebook isn't that portable, but it's what we expected. Battery life is admirable, but not great.

The Voyager C510 makes full use of PCI Express technology and is the fastest Sonoma notebook we've seen. At £1,173.83, it's a real bargain.

**Will Stapley**

**PERFORMANCE**




**DETAILS**

**RRP** £1,173.83 (£999 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Evesham 0870 160 9500
**www.evesham.com**
**SPECIFICATIONS**
PentiumM 760 2GHz • 512MB DDR2 533MHz Ram • 80GB Sata hard disk • 15in 1,680 x 1,050 widescreen • Nvidia Go 6600 128MB • DVD-RW dual-layer • HD Azalia audio • 5 USB2, 1 Firewire • 802.11a/b/g • 3yr warranty • 2.9kg • 357 x 276 x 35 (w x d x h mm)
**PROS** Fast; good value for money
**CONS** Battery life not exceptional
**VERDICT**
**This notebook shows what the next generation of Centrino can do and comes recommended**

| | |
|---|---|
| FEATURES | ★★★★☆ |
| PERFORMANCE | ★★★★★ |
| VALUE FOR MONEY | ★★★★★ |
| OVERALL | ★★★★★ |

PENTIUM 4 NOTEBOOK

# MV Ixius 3.4TV

## One of the most powerful notebooks around

This latest Ixius isn't a notebook in the traditional sense. According to MV, it's a 'transportable'. In other words, it's designed for people who want to work between a couple of sites rather than for regular commuters. At 5.5kg it's certainly heavy to carry around and with a battery life of just 65 minutes, you wouldn't get much done if you did.

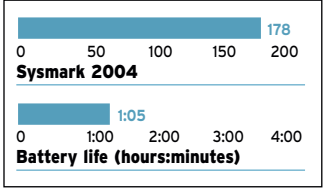
Inside the huge case is a full desktop Pentium 4 clocked at 3.4GHz – part of the reason the system is so big. There's 512MB of Corsair memory but only a 60GB hard disk, which seems a stingy given how well specified the rest of the system is. MV has included a 17in widescreen display and Nvidia's Geforce 6800 Go on the graphics side, with 256MB of dedicated Ram, plus an internal analogue TV tuner.

In tests the Ixius managed a 3Dmark05 score of 2,803 and a Sysmark result of 178 – outstanding for a notebook. It has all the ports you'd expect, along with a the dual-layer DVD burner, so there isn't a lot you will want or need to upgrade. It also comes with Ability Office, Intervideo's Wincinema and Panda Titanium Antivirus, though the latter is the 2004 version, making it ready to go straight away.

The Ixius is a huge and capable beast with the power to cope with both office applications and 3D games. It's loaded with features and would make an ideal desktop replacement, but it's not suited for those looking for truly portable system.

**Anthony Dhanendran**

**PERFORMANCE**




**DETAILS**

**RRP** £1,619.15 (£1,378 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION** MV 0871 855 4668 **www.go-mv.com**
**SPECIFICATIONS**
Windows XP Home • Intel Pentium 4 550 3.4GHz • 512MB Corsair DDR2 memory • Hitachi 7,200rpm 60GB hard disk • Sony 8x DVD burner • Nvidia Geforce 6800 Go 256MB video memory • 17in widescreen TFT • Internal TV tuner • DVI port • 5.5kg • 395 x 295 x 55 (w x d x h mm) • 3yr warranty
**PROS** Great graphics; features
**CONS** Heavy; bulky
**VERDICT**
**If you can leave it in one place, it's about the most powerful notebook around**

| | |
|---|---|
| FEATURES | ★★★★★ |
| PERFORMANCE | ★★★★★ |
| VALUE FOR MONEY | ★★★★☆ |
| OVERALL | ★★★★☆ |

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POCKET PC/PDA

# Dell Axim X50v

## A compact PDA with a remarkable display

If you never switched it on, there would be little to make Dell's latest pocket pal stand out from the crowd of Windows Mobile-powered PDAs. It's slim and stylish enough, and has all the buttons in the right places. However, turning on the power is expected of the conscientious reviewer, so juice was duly supplied. And goodness – what a show!

Actually, not much happens other than the routine Windows Mobile setup wizard, but even this is something to behold: the unit's 480 x 640 pixel display is a proper eye-catcher. As well as being bright and evenly lit, the screen's portrait-VGA resolution sets the X50v apart from many of its contemporaries.

Supporting this fine screen is Intel's 2700G 'multimedia accelerator' chipset, designed to boost the 3D-graphics capabilities of Windows palmtops. On the evidence of two supplied 3D games – Enigmo and Stunt Car Extreme – we're prepared to believe that the 2700G has potential. The latter title, in particular, was graphically very impressive.

The rest of the X50v's specifications follow an undulating curve. The Ram complement is 64MB, but the flash Rom ups the ante by 128MB. If you need more storage, the option to slot in both Compact Flash and Secure Digital cards is commendable. Bluetooth and Wifi (802.11b) connectivity are all but standard issue on PDAs these days, but Dell perhaps missed a trick by not including a rear-side lens and digital camera.

Finally, battery life averaged around five hours, with variable use of the wireless functions. The supplied USB cradle doubles up as a charger, though an adapter is provided to charge the X50v directly through its base if required.

**Scott Colvey**

**DETAILS**

**RRP** £348.39 (£296.50 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Dell 0870 907 5818
**www.dell.co.uk**
**SPECIFICATIONS**
Windows Mobile 2003 2nd Edition • Intel XScaleTM PXA270 (624MHz) • 3.7in diagonal screen; 65,000 colours • 128MB Intel Strataflash • 64MB SD-Ram • Compact Flash Type II, 1 Secure Digital/SDIO Now/MMC slot • Infra-red & 3.5mm jack • 175g • 73 x 17 x 119 (w x d x h mm) • USB, Wifi, Bluetooth
**PROS** High-resolution display; two memory card/expansion slots
**CONS** Battery flap; no camera
**VERDICT**
**A good PDA with a great screen**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **EASE OF USE** | ★★★★★ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

MP3 PLAYER

# Ipod Shuffle

## The latest Ipod product looks like another hit

As the Ipod continues on the road to world domination, so Apple has released the next member of the family, the Ipod Shuffle. Available in two sizes – 512MB and 1GB – and no bigger than a packet of chewing gum, it's aimed at those who are keen to be part of the white headphone-wearing masses, but don't need the capacity, or the price tag, of the bigger models.

The 1GB model, reviewed here, holds approximately 240 songs and comes with Itunes for both Windows and Mac. To transfer tracks you simply plug the Shuffle into a spare USB port, create a new playlist, choose the songs you want to listen to and instruct Itunes to fill up the unit.

You can fill the Shuffle with songs in a particular order and play them back in the same way, or set it to shuffle mode and let it choose for you. Changing tracks is as easy as changing the playlist – the Shuffle will automatically synchronise when you plug it in. Connecting also recharges the battery.

It's extremely simple to set up and use, but the real beauty of it is the size – small, yet perfectly formed. A basic version of the standard Ipod click wheel sits on the front to control your selections, while playing options can be found on the back. The USB connector can be covered by a small protective cap or connected to a supplied lanyard to go round your neck.

The only minus point is the lack of a screen, but this really didn't prove to be a problem and audio quality is on a par with other Ipods.

With up to 12 hours of playback and the option to use it as a standard flash drive for transferring data files, the Ipod Shuffle is set to be in high demand. At this price, we can see why.

**Kathryn Twyford**

**DETAILS**

**RRP** £99 (£84.26 ex VAT) (1GB); £69 (£58.72 ex VAT) (512MB)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Apple 0800 039 1010
**www.apple.com/uk**
**SPECIFICATIONS**
512MB/1GB flash drive • Stores approx 120/240 songs (based on 128KB aac files) • USB interface • Supports aac, mp3 and wav audio formats • 22g • 12-hour battery life • Lanyard • 84 x 25 x 84mm (w x h x d) • Includes Itunes for Mac and Windows
**PROS** Size; easy to use
**CONS** No screen
**VERDICT**
**Small yet perfectly formed, the Ipod Shuffle is set to be a big hit**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★☆☆ |
| **OVERALL** | ★★★★☆ |



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| | |
|---|---|
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| Kensington® Pocket Mouse Pro Wireless[1] | £32 incl. VAT |

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### Further enhancements

| | |
|---|---|
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**E-VALUE Code: UKPP4-N035M1**

### Further enhancements

| | |
|---|---|
| Standard Service Package | £224 incl. VAT |
| Microsoft® Windows® XP Professional[1] | £59 incl. VAT |
| 15" SXGA+ TFT Display (1400x1050) | £41 incl. VAT |

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- Integrated Direct AGP Graphics
- Internal 8x DVD+/-RW Drive[2]
- 56 K Data Fax Modem
- 1 Year Euro Collect and Return Service[4]
- Microsoft® Works 7.0

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### Further enhancements

| | |
|---|---|
| 19" Digital Flat Panel Monitor | £294 incl. VAT |
| Dell Axim X3 Standard | £164 incl. VAT |
| 19" Digital Flat Panel Monitor | £294 incl. VAT |

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HANDHELD CONSOLE

# Nintendo DS

## Innovative and fun for kids

On paper, it would be easy to assume that Nintendo's brand new handheld console, the DS, has lost the portable gaming war before it has even begun. The reported specification for Sony's imminent Playstation Portable (dual 333MHz MIPS processors, 32MB system memory and 480 x 272 pixel widescreen TFT) already makes the DS' 67MHz ARM9 and 33MHz ARM7 processors with 4MB of system Ram seem somewhat flaccid. The DS is also very much a traditional gaming device, rather than the multipurpose, multifunction gadget that the PSP purports to be. Meanwhile, the device's touch-sensitive dual screen could easily be mistaken for a gimmick.

In fact, the DS is a winning combination of simplicity and innovation. Admittedly it misses the mark somewhat with its silver clamshell design. It looks unfinished and clunky, as if it were still at the prototype stage. It is durable, however, which hints at the fact that Nintendo has made the sensible decision to aim the DS at its core audience – younger gamers. This is also reflected in the range of launch software available with Mario, Rayman and Pokemon.

Graphically, the DS looks good. The 3D visuals are on a par with those of the N64, albeit on a smaller scale. The touchscreen works rather well, too. It's put to good effect in the micro-game frenzy of Wario Ware Touched and Metroid Prime: Hunters, the latter demonstrating the control system's surprising effectiveness for first-person shooters.

Integrated wireless capability, a built-in microphone and virtual surround stereo speakers all add to the possibilities. But at its heart the DS is a typical Nintendo product – a platform for fun, colourful games.

**James Bennett**

### DETAILS

**RRP** £99 (£84.25 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Nintendo 0870 6060 247
**www.nintendo-europe.com**
**SPECIFICATIONS**
Two 3in TFT LCD screens with 256 x 192 pixel resolution and 0.24mm dot pitch • ARM9 & ARM7 processor • 4MB of Ram • 656KB video Ram • Ports for Nintendo DS Game Cards and Game Boy Advance Game Paks • Integrated 802.11 Wifi • 250g • 149 x 85 x 29 (w x d x h mm) • 6-10 hours of battery life
**PROS** Fun; innovative touchscreen
**CONS** Feels like a toy
**VERDICT**
**A fine console, likely to prove popular with younger gamers**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★☆☆ |

MULTIFUNCTION DEVICE

# HP PSC2710

## A wealth of features, but expensive

It's easy to think of multi-function devices (MFDs) as jacks of all trades, offering reasonable, but not outstanding performance. With the Photosmart 2710, however, HP attempts to show it doesn't always have to be this way.

At 8.5kg, the 2710 is large and hefty – understandable given that it incorporates colour scanning, printing, copying and fax functions. It also features a built-in card reader and a 3.4in LCD which, in conjunction with an easy-to-use control panel, lets you adjust fax and copy options and view images stored on most popular memory cards or Pictbridge-compatible digital cameras.

The Photosmart 2710's biggest selling point is arguably its integrated 802.11b/g wireless adapter, allowing you to print documents without the need for a USB or Ethernet cable. This gives you the freedom to position the printer anywhere, although big jobs worked more reliably using a wired connection.

We were pleasantly surprised by the Photosmart 2710's print quality. Photo prints were excellent on HP's own paper, while black text prints were up to the usual high standards. Unfortunately, if you print lots of documents, its 2.1 pages per minute print speed (at the highest quality setting) may prove too slow for you.

At £300, the Photosmart is expensive but it has reasonable running costs. HP black ink cartridges cost around £23 and provide 800 pages approx at five per cent coverage, while tri-colour cartridges provide 450 pages at 15 per cent.

If you're after a high-end all-in-one device, the Photosmart 2710 is worth considering. It may be pricey, but its solid performance and reasonable running costs are hard to ignore.

**Rory Reid**

### DETAILS

**RRP** £300 (255.31 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
HP 0870 010 4320 **www.hp.co.uk**
**SPECIFICATIONS**
Thermal inkjet • HP Photoret III • 800 x 1,200-optimised dpi colour printing • 2,400 x 4,00spi colour scanner • Up to 30ppm black text printing/20ppm colour (draft mode) • 30 copies per minute (max) • 3 seconds per A4 page faxing • Input: up to 150 sheets; Output: up to 50 • Modem • Ethernet, Wireless 802.11b/g networking, USB, Pictbridge
**PROS** Mono and colour output
**CONS** Cost; speed at high quality
**VERDICT**
**Solid performance and a wealth of features**

| | |
|---|---|
| **FEATURES** | ★★★★★ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

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3G MOBILE PHONE

# Samsung Z107

## A solid debut for Orange's 3G network

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The Samsung Z107 is one of the first handsets available on Orange's 3G mobile phone network.

As with a number of modern designs, the Samsung has two colour displays. The external screen is reserved mainly for the time, signal strength and battery life, but it can also display wallpaper or images associated with your phonebook entries. The main internal screen is used for all the other usual phone functions.

Flipping open the Z107 doesn't lead to any major surprises. There is a logical button layout with large, well-labelled keys, a 262,000-colour display, and a central rocker button for navigating the menu. Unfortunately, this isn't arranged very clearly. It has nine discrete icons for each section, but their exact functions don't become clear until you hover over each icon, at which point its name will appear.

One of the phone's most notable characteristics is its range of bizarre sounds. Most of the noises emitted while using the buttons are highly comical, and we received many strange looks when using it in public. The phone also has a tendency to emit an uncomfortably loud noise while you're dialling – a worrying feature, since most people are likely to have it pressed up against their ear at this time. Fortunately, this can be switched off.

Video calling is supported and the phone can access Orange's 3G portal (Orange World) where you can download or stream movie trailers, news, football highlights and traffic updates.

You can also surf the Internet, a feature rival 3G networks, such as 3, don't offer.

On the whole, this is a solid handset. It can be difficult to get to grips with initially, but its excellent features and potential for downloading interactive content make it attractive.

**Rory Reid**

### DETAILS

**RRP** From £49.99 with contract
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION** Orange 0800 079 0042 **www.orange.co.uk**
**SPECIFICATIONS**
262,000-colour (internal), 64,000-colour (external) screens • VGA camera • Rotating lens • Dual band • 5-hour talk time • 260-hour standby • 48 x 89 x 25mm (w x h x d) • 115g
**PROS** 3G compatible
**CONS** Comical noises
**VERDICT**
**A good showcase for Orange's new 3G network, but may not appeal to more serious users**

| | |
|---|---|
| FEATURES | ★★★★☆ |
| PERFORMANCE | ★★★★★ |
| VALUE FOR MONEY | ★★★★★ |
| OVERALL | ★★★★☆ |

PHOTO PRINTER

# Dell 540 Photo Printer

## Cheap to run with quick performance

Continuing its push into the peripherals market, Dell has launched its first 6 x 4in borderless photo printer. However, instead of using familiar inkjet printing, the 540 (designed by Kodak) uses an alternative technique known as thermal dye transfer technology.

A cartridge slips into the side of the printer, which contains cyan, magenta and yellow cellophane strips. To produce photos, the printer makes three passes to add each colour and a final transparent pass that adds a protective gloss.

The advantages of this method are instantly dry photos and cheap running costs. Each Dell Photo Print Pack, which contains 40 sheets of glossy paper and a print cartridge, equates to around 30p per print. Buy a triple pack and the cost per print drops to 27p per photo.

However, print quality is a concern. Compared to other printers of its ilk, the 540 produced grey-tinted photos and dull colours. The printer driver does include a 'vivid' mode to increase contrast, but this just seemed to make images look over-flooded with colour.

For the casual user, the Dell 540 is a neat device. Print quality may not be outstanding, but it's certainly not poor and it spits out each print in less than a minute. The ability to print from five different types of memory card, USB keys or Pictbridge-compatible cameras is a definite benefit and the initial cost is the cheapest we've seen. The inbuilt menu system is easy to operate and the LCD screen is sharp. However, photo-printing enthusiasts will be more satisfied with other devices, even if they cost a little more.

At the time of writing, Dell was offering a discount on the 540, reducing its cost to just £118.68 (£101 ex VAT).

**Luke Peters**

**DETAILS**

**RRP** £118.68 (£101 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Dell 0870 152 4699
**www.dell.co.uk**
**SPECIFICATIONS**
Thermal dye transfer • 20-sheet input tray/25-sheet output tray • 1ppm colour/mono • 1 cartridge • 30p per page • CF, SD, MMC, SM, MS and USB memory key slots • USB2 • 1.64kg • 191 x 137 x 81 (w x d x h mm) • Dell Picture Studio, Paint Shop Photo Album trial, Paint Shop Pro trial
**PROS** Cheap to run; quick prints
**CONS** Dull prints; large footprint
**VERDICT**
**A great price for a photo printer, but those after top-quality images should look elsewhere**

| | |
|---|---|
| FEATURES | ★★★★☆ |
| PERFORMANCE | ★★★☆☆ |
| VALUE FOR MONEY | ★★★★☆ |
| OVERALL | ★★★☆☆ |

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# Ipod accessories

It's almost impossible not to get caught up in the hype surrounding Apple's Ipod. Over 10 million of these iconic devices have been sold to date, with some analysts predicting sales of nearly 23 million units by 2006. Much of this success is down to the burgeoning accessories market. Apple, along with various third-party vendors, provides add-ons to turn the Ipod into a replacement for your home hi-fi, car stereo and more. Read on to discover some of the possibilities.

**Rory Reid**

## ▲ Bose Sounddock

The design of the Bose Sounddock is surprisingly stylish and compact and unlike that of most speaker systems. It matches the Ipod colour scheme so, if you're a fan of Apple's understated and elegant design, it should appeal.

Setting up the Sounddock was relatively easy. Included are five cradle inserts to fit all five generations of Ipod (including the Ipod mini). These clip onto the front and act as a docking station, charging the Ipod's battery as it plays. Unfortunately, there is no way of connecting the Ipod to your PC or Mac at the same time.

Bose refuses to quote specs for the speakers and amplifier, but it uses multiple audio drivers to excellent effect. The Sounddock produced the best sound we've heard from any speaker of this size. Audio with prominent mid-range and treble was well recreated, and there was also a startling amount of bass.

This performance doesn't come cheap and if you're serious about audio, you may prefer a seven-channel speaker system with a dedicated subwoofer for less than £200. However, if you want something that takes up very little room and can still wake the neighbours, the Sounddock is an excellent choice.

**RRP** £249.95 (£212.72 ex VAT)
**PRODUCT INFORMATION** Bose 0800 085 9021
**www.bose.co.uk**
★★★★★

## Griffin Italk

If you want to use your Ipod as a voice recorder, the Griffin Italk is worth a look. It is attractively styled and a silver grille masks the integrated loudspeaker and microphone. You can record both personal dictation, or sounds at a distance of up to 30 feet. This is done through an automatic recording gain feature which adjusts the recording sensitivity according to signal strength.

**RRP** £29.95 (£25.48 ex VAT)
**PRODUCT INFORMATION** Apple Store 0800 039 1010
**www.griffintechnology.com**
★★★★☆

## Lilipod

The Lilipod resembles an old-fashioned hipflask, but is far more versatile. It forms a watertight seal around your Ipod using a compression clamp and rubber O-ring. The 2mm thick plastic shell is shock resistant and floats in water, making it an ideal companion if you're into extreme sports or simply want to listen to your Ipod while having a shower.

**RRP** £39.95 (£34 ex VAT)
**PRODUCT INFORMATION** Apple Store 0800 039 1010
**www.lilipods.com**
★★★☆☆



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## ▼ Navipod IR Remote

The Navipod is a wireless remote control that lets you operate your Ipod from across the room while it is connected to external speakers.

The device works in conjunction with an infra-red remote receiver that clips into the headphone jack/remote port at the top of your Ipod. Speakers are connected via a pass-through at the rear. As a useful addition, the Navipod includes a removable chrome stand that can be used to prop up the Ipod when it is not in a docking cradle.

The circular remote measures around 2.5in in diameter and has buttons for playing, pausing, rewinding and volume adjustment, and can be operated fairly easily with one hand. It is attractive on the whole, but the neon-green Ten Technologies logo may not be to everyone's taste.

As with all remotes of this type, if you want to do more than skip and pause tracks you'll have to walk over to the Ipod to get a closer look at where you are in the menu. The volume adjustment is a useful and intuitive feature, but many speaker systems, such as the Sounddock (pictured left), include their own remote.

We would have preferred the Navipod's remote control to have included an LCD screen that mimicked the Ipod's display but, aside from this drawback, it is a useful and effective product.

**RRP** £69.95 (£59.53 ex VAT)
**PRODUCT INFORMATION** Apple Store 0800 039 1010
**www.griffintechnology.com**
★★★☆☆

## ▲ Belkin Digital Camera Link

Given that it's basically just a portable hard disk, the Ipod is capable of storing digital images as well as the latest tunes. In order to get your pictures onto it, however, you'll usually need to transfer them from your camera to a PC or notebook beforehand.

Belkin's Digital Camera Link (DCL) lets you send images directly from your camera to an Ipod. It links to your Ipod via a Dock Connector cable and to your camera via USB. Once your camera is in data transmission mode, flashing LEDs indicate whether a connection has been established or if a transfer is in progress. Unfortunately, these are under a frosted plastic panel so can be difficult to see.

Once connected, the Ipod displays the 'Do Not Disconnect' message, at which point you press the file transfer button. Once the transfer is complete, the Ipod reverts to its main menu.

File transfer speeds were fairly modest. We achieved about 5Mbytes/sec with an 8x Secure Digital (SD) card, although this varies depending on the type of camera used.

The DCL does not work with all digital cameras. If your computer recognises your camera as a mass storage device there's a good chance it is compatible, but check with Belkin before you splash out. Provided your camera is compatible, this is effective and affordable.

**RRP** £35 (£129.78 ex VAT)
**PRODUCT INFORMATION** Belkin 0800 223 55 460
**www.belkin.com/uk**
★★★★☆

## Belkin Backup Battery Pack

The Backup Battery Pack gives you the freedom to take your Ipod on the road without having to carry a charger or international plug adapter. It fits neatly around your Ipod, connected via suction cups, and provides 15-20 hours of life via four AA batteries. On the downside, it is bulky and may not fit in your pocket when attached to your Ipod.

**RRP** £69.95 (£59.53 ex VAT)
**PRODUCT INFORMATION** Belkin 0800 223 55 460
**www.belkin.com/uk**
★★★☆☆

## Solio Solar Powered Mains Charger

It may not be of much use to us Brits during winter, but with enough sunlight the Solio can extend your Ipod's playback time by up to nine hours. Fortunately, it can also be charged up via the mains to provide a portable power pack that is also compatible with other devices such as mobile phones and PDAs. An ideal companion for those who are often on the move.

**RRP** £49.95 (£42.51 ex VAT)
**PRODUCT INFORMATION** Everything Ipod
**www.everythingipod.co.uk**
★★★☆☆


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## Tivoli Ipal

Unlike the Bose Sounddock speakers, the Tivoli Ipal wasn't specifically designed with the Ipod in mind. It is derived from the Tivoli Portable Audio Lab (PAL), and has been given a minor name change and facelift to cash in on the growing Ipod accessories market.

The most notable feature is the radio playback capability. The Ipal has integrated FM and AM tuners, and an antenna that can be extended or folded neatly away. The most attractive feature is a large tuner dial that allows precise navigation through the frequency bands.

To use the Ipal with an Ipod, or any other digital audio player, you'll need to connect the devices via an auxillary headphone jack. Unfortunately, the Ipal cannot be connected via the Ipod's Dock Connector, which many believe offers a superior audio signal.

In reality, this isn't too much of a concern, since the quality of the Ipal's audio output is average at best. It uses a single and rather small speaker so, despite it accepting a stereo input from your audio player, it only produces mono sound. The effect is adequate for small, quiet rooms but there is no way to directly adjust the speaker's audio settings, so any bass or treble changes will have to be done via the Ipod.

One of the Ipal's major selling points is portability. It can be powered by the mains or by the bundled rechargeable battery, which Tivoli claims can provide 10-16 hours of playback. This is a useful feature but, given the product's retro styling, it's better suited to indoor use.

**RRP** £129 (£109.78 ex VAT)
**PRODUCT INFORMATION**
Apple Store 0800 039 1010
**www.tivoliaudio.com**
★★☆☆☆

## In-car Ipods

**Although the Ipod was designed to be used like a personal stereo, it can be attached to a car stereo. Apple has worked with companies including BMW, Mercedes-Benz and Volvo to develop solutions.**

**Ipod integration systems work in one of two ways. You connect an Ipod to a cable in the glove compartment and control playback via the in-dash stereo or steering wheel remote control. Or you use a dashboard-mounted FM transmitter. This broadcasts audio from your Ipod to an isolated radio frequency, which you can tune into using your car stereo.**

**Transmitting an FM signal without a licence is illegal in the UK, however, so if you want to avoid being arrested, stick to the first method, or use a cassette adapter.**

## Denison Ice Link: Ipod Plus

If you want high-quality audio in your car, the Dension Ice Link: Ipod Plus could be the ideal solution. It connects to your Ipod via a dash-mountable cradle and transmits audio via your car's CD changer port. You can access your first five playlists by pressing disk numbers 1-5 on your stereo, but you'll need to use your Ipod's controls to access the remaining functions.

**RRP** From £99.99 (£85.09 ex VAT)
**PRODUCT INFORMATION** Ipodmycar.com 0870 759 0609
**www.ipodmycar.com**
★★★★☆

## Monster Icar Cassette Adapter

Those of you who were mocked for having an in-dash cassette player can now get even with the Monster Icar Cassette Adapter. It doesn't deliver the best sound quality, but it works with front or side-loading cassette players and is an ideal way playing your digital audio collection on an analogue device.

**RRP** £17.95 (£15.28 ex VAT)
**PRODUCT INFORMATION**
Apple Store 0800 039 1010
**www.monstercable.com**
★★★☆☆

DIGITAL CAMERA

# Nikon Coolpix 4800

## This weighty contender has much to offer

Sitting alongside the Olympus Mju-Mini (see review, right) the 4megapixel Nikon Coolpix 4800 looks like a camera with a weight problem. While most digital models are getting smaller, this one bucks the trend with a bulky design that would make it hard to slip into a pocket. However, beauty is only skin deep and when you scratch the surface of the Nikon you realise it has a lot to offer.

To start with, the Coolpix 4800 features a powerful 8.3x optical zoom lens with a huge focal range equivalent to 36-300mm in a 35mm film camera, which simply could not be housed in a more compact unit. ISO, white balance and exposure settings can also be changed manually.

For everyday point-and-shoot snapping, there are 15 scene modes with preprogrammed settings to optimise snaps in different environments. A clever panorama assist mode helps you take overlapping pictures that can later be turned into one continuous image.

A wheel on the back features four of the most commonly used scene modes and gives access to the camera setup menu and movie options. There are three image resolution settings to choose between in movie capture mode, with no limit on the length of the clips you record. This is determined by the amount of memory at your disposal.

Buttons on the back of the unit give fast access to flash settings and the macro mode, which should let you take close-ups at an impressive 1cm from your subject. Colours were well reproduced in test images and there are enough settings to optimise just about any photo.

It's not one of the flashier cameras on the market today, but the Coolpix 4800 has a lot going for it.

**Emilie Martin**

**DETAILS**

**RRP** £349.99 (£297.87 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION** Nikon 0800 230 220 **www.nikon.co.uk**
**SPECIFICATIONS**
4megapixels • 8.3x optical/4x digital zoom • 36-300mm focal length • 1.8in LCD screen • Viewfinder with diopter adjustment • Rechargeable lithium-ion battery • 13.5MB internal memory • SD memory card compatible • 106 x 66 x 54mm (w x h x d) • 255g
**PROS** Powerful optical zoom; easy to use; range of features
**CONS** Bulky and not that portable
**VERDICT**
**Versatile and feature-rich, the Nikon has a lot to offer the less image-conscious photographer**

| | |
|---|---|
| **FEATURES** | ★★★★★ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

DIGITAL CAMERA

# Olympus Mju-Mini

## A real looker that keeps things simple

It's pretty hard not to fall for Olympus' 4megapixel Mju-Mini from the moment you take it out of the box. Its quirky but sleek design fits perfectly in your hands and the matt aluminium casing is available in six eye-catching colours.

The Mju-Mini offers a 2x optical zoom controlled by a tilting button that gives superbly smooth zoom movement. A sliding scale displayed on the clear 1.8in screen shows you how much you have zoomed in on or out from a subject and indicates when the 4x digital zoom is in use.

Meanwhile, a circular button at the back gives fast access to macro and super macro modes for close-ups, flash modes, the self-timer and automated scene settings. The Olympus features a comprehensive range of 13 pre-set scene modes.

A smaller button mounted in the centre of this control takes you through to the camera setup menu and the advanced manual shooting menu, which lets you change ISO and white balance settings, among others. You'll also find image resolution and quality settings here, which range from high-quality images at 2,272 x 1,704 pixels down to 640 x 480 pixels. At the top of the unit, a mode wheel lets you swap between still image shooting, review and movie clip shooting modes.

The Olympus draws its power from a lithium-ion cell and a 16MB XD memory card is included with the camera.

In tests we managed to take some great snaps with the Olympus, complete with vibrant colours and a good level of detail in close-up macro mode.

A compact object of desire, the Mju-Mini is ideal for straightforward on-the-hoof photography, but offers just enough features and settings which cater for the more hands-on photographer.

**Emilie Martin**

**DETAILS**

**RRP** £250 (£212.77 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Olympus 0800 072 0070
**www.olympus.co.uk**
**SPECIFICATIONS**
4megapixels • 2x optical/4x digital zoom • 35-70mm focal length (35mm film equivalent) • Auto, forced, red-eye reduction flash • 1.8in LCD • 16MB XD picturecard • 95 x 28 x 56 (w x d x h mm) • 115g • USB2 • Two-year warranty
**PROS** Easy to use and eye-catching
**CONS** Only a 2x optical zoom
**VERDICT**
**This is a camera you'll want to be seen with**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |



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PROJECTOR

# Viewsonic PJ755D

## Ideal for business and home cinema buffs

Until quite recently, digital light processing (DLP) projectors were expensive gadgets bought by business users who needed them for sales pitches. Increasingly, though, projectors are now being aimed at home cinema buffs, and Viewsonic clearly has its eye on that market with its PJ755D.

The PJ755D has a maximum resolution of 1,024 x 768, and produces a clear, bright image when displaying both DVD films and business presentations. The back panel of the unit is festooned with input connectors, including DVI, VGA, S-video, composite video, and stereo audio, so you can use it with any type of PC or home video equipment.

Setting up the projector is straightforward. Viewsonic provides all the audio and video cables you need and the control panel on the top of the unit is very simple. There are just two main buttons – a Power button and a Menu button that activates an on-screen menu for adjusting brightness, contrast and other settings. Four more buttons allow you to navigate through the menu options or you can use the remote control to adjust the projector while you give a presentation or lounge on the sofa.

The remote control has a few extra handy options as well, such as a zoom control and a freeze-frame command. It's also got a small trackpad and a couple of buttons to control the mouse cursor on a PC (although you need a USB cable to connect the PC to the projector to use this feature).

At just under £1,400 the PJ755D isn't exactly an impulse buy, but it is a viable alternative to a large-screen television, and versatile enough to use as part of a home cinema system or simply for Powerpoint slideshows.

**Cliff Joseph**

### DETAILS

**RRP** £1,396 (£1,188 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Viewsonic 01293 643 900
**www.viewsoniceurope.com**
**SPECIFICATIONS**
DLP projector with 1,024 x 768 resolution • 2,700 lumens • 250w lamp • NTSC and Pal-compatible • Supports letterbox, 16:9 and 4:3 display formats • DVI, VGA, S-video, composite video • Handheld remote control • 3.4kg • 330 x 100 x 269mm (w x d x h)
**PROS** Easy to use; high quality
**CONS** Expensive; documentation
**VERDICT**
**Expensive, but it's good for home cinema buffs or business users**

| | |
|---|---|
| FEATURES | ★★★★☆ |
| PERFORMANCE | ★★★★☆ |
| VALUE FOR MONEY | ★★★☆☆ |
| OVERALL | ★★★☆☆ |

PORTABLE MULTIMEDIA PLAYER

# MSI Megaview 566

## Take your music and movies on the move

MSI's Megaview 566 is the latest in the emerging line of portable devices aimed at people who want to enjoy multimedia on the move. As with rivals from Creative and Samsung, it can be used to play audio and video, and also display still images.

But unlike Portable Media Centers, which are based on Windows, the Megaview uses its own proprietary operating system with some extra features. These include an FM radio tuner and the ability to record audio and video directly from a television, PC, FM tuner or hifi to its internal hard disk.

The Megaview 566 is compatible with DivX and wmv video files, although it is restricted to recording in the asf format at a maximum resolution of 320 x 240. At this setting, the 44-minute television broadcast we recorded took up 530MB of hard disk space.

Provided you haven't filled the device with photos or mp3s, its 20GB hard drive should be enough to store approximately 30 hours of video. Better file compression can be achieved by converting video with the bundled Dr DivX software, but sadly this is a time-restricted trial version.

We were slightly disappointed by the quality of the Megaview 566's 3.5in LCD screen, which has a very narrow viewing angle and lacks some definition. Despite this, most users should find it adequate for everyday use.

It is also let down by its average 90-minute battery life, though a spare rechargeable battery is included. You also get a tripod, infra-red remote and an RCA cable. Unfortunately MSI has not included a Scart adapter, which you may need if your AV equipment doesn't support composite connections.

It isn't the best device around, but the Megaview 566 is a versatile, lightweight and affordable alternative to a Portable Media Center.

**Rory Reid**

### DETAILS

**RRP** £250 (£212.76 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Morgan 020 8575 0055
**www.morgancomputers.co.uk**
**SPECIFICATIONS**
3.5in LCD screen • 480 x 234 resolution • 20GB hard disk • FM tuner • Mp3/mpeg4 playback • AV decoding/encoding • Voice recording
**PROS** AV recording; lightweight
**CONS** Screen quality; battery life
**VERDICT**
**An efficient and cost-effective way to take your multimedia collection on the move**

| | |
|---|---|
| FEATURES | ★★★★★ |
| PERFORMANCE | ★★★☆☆ |
| VALUE FOR MONEY | ★★★★★ |
| OVERALL | ★★★★☆ |

## ACCESSORIES

### Shuttle CR40

Shuttle is known for stylish, good-quality PC products and its first dual-format DVD writer adds to that reputation. The CR40 comes in white, black or silver, to match Shuttle's range of cases, but you could just as easily install it in your standard PC.

The CR40 was easy to install and get running and comes bundled with Ahead Nero 6 Suite. It performed well in our tests taking six minutes, 40 seconds to burn 4.1GB of data on a single-layer DVD+R at 16-speed, and 29 minutes, 18 seconds for 7.8GB on dual-layer media. For full performance results and to compare these against rival and cheaper products, see the optical media category on our labs blog at **www.pcw.co.uk/labs**.

Overall, if you have a Shuttle PC and need a DVD writer, this is a must. If you just want a well-performing DVD for your standard PC, this is a good choice, although not for those on a budget.

**Rob Jones**

**RRP** £101.05 (£86 ex VAT)
**PRODUCT INFORMATION** **www.shuttle.com**
**PROS** Fast; easy to install and get running
**CONS** More expensive than rival burners
★★★☆☆

### Mediagear Combo 9-in-4 Reader Writer

If your PC didn't come with an inbuilt memory card reader, adding one makes it much easier to download snaps from a digital camera and transfer files from PDAs or mp3 players. Mediagear's latest is compatible with no fewer than nine different formats, including Compact Flash, SD, Memory Stick Pro and XD picture card formats.

A compact and lightweight design means it's ideal to take on the move with a notebook and the unit will happily work with both PCs and Macs. Transfer rates via USB2 were excellent and data can be copied to and from the host in, well, a flash.

The only snag we found was that initially some cards were difficult to insert, though we quickly got the hang of it. The unit comes with a 3ft extension cable and a one-year warranty.

**Anna Lagerkvist**

**RRP** £14.09 (£11.99 ex VAT)
**PRODUCT INFORMATION** Mediagear 0800 013 0330
**www.crucial.com/uk**
**PROS** Compact design; very quick file transfer
**CONS** A little difficult to insert some types of memory cards
★★★☆☆

### LG Flatron L1980u

A recent addition to LG's popular Flatron range, the ultra-slim L1980u has something of a twist. The 19in TFT screen can pivot around for landscape or portrait operation, allowing users to select the best way to view their applications.

If nothing else this model is certainly stylish, and the thin but surprisingly strong circular base allows for both analogue VGA and DVI connections. An adjustable arm supports the 12ms panel, but annoyingly, it's rather short. This makes turning the display more difficult than it should be and it's easy to accidentally hit the power switch when you do. The other controls can also be fiddly.

In tests picture quality was up to the usual LG standards with sharp images, solid colours and crisp text. However, the bottom of the picture was noticeably brighter than the top.

**Chris Cain**

**RRP** £358.36 (£304.99 ex VAT)
**PRODUCT INFORMATION** Microdirect 0870 44 44 456
**www.microdirect.co.uk; www.lge.co.uk**
**PROS** Landscape or portrait operation; stylish
**CONS** Swivel can be awkward, fiddly controls
★★★★☆

### Fujitsu Dynamo 1300LT

Fujitsu's latest pocket-sized magneto-optical (MO) drive, the Dynamo 1300LT, uses 3.5in MO discs offering up to 1.3GB capacity. MO discs are physically robust and have a long life expectancy and can be rewritten 10 million times. They appear as a removable hard drive, so they can be used by most backup software. The downside is that performance is pretty slow and a driver is needed for Windows versions, but not Mac OSX. The 1.3GB discs cost about £9 each.

The 410g drive isn't much bigger than the MO media and is powered by the USB2 bus, so no power adapter is needed. You get a USB cable, hard travel case and desktop stand, plus Fujitsu's Novadisk backup software. On the installation CD are utilities to let you create a password-protected MO disc and encrypted folders. It's a great drive that's much more cost-effective and versatile than USB flash drives.

**Kelvyn Taylor**

**RRP** £146.86 (£124.99 ex VAT)
**PRODUCT INFORMATION** Fujitsu 0870 242 7998 **www.fujitsu.co.uk**
**PROS** Robust; secure data; bus-powered
**CONS** High initial cost; slow performance
★★★☆☆


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## Sapphire Radeon X700 Pro Toxic

The latest addition to Sapphire's Toxic range of overclockable graphics cards, the 128MB X700 Pro is based on the Hybrid X700 Pro. As usual, it features a custom cooling system that lets you run it at much higher clock speeds than standard models.

Included with the card is a copy of Sapphire's APE (Automated Performance Enhancement) utility, which, when loaded, raises the core speed by 52MHz to 472MHz. It also pushes the memory speed up to 500MHz. However, the card is capable of more and in tests it remained stable with a core clock of 488MHz and the memory running at 542MHz.

Apart from the usual bundle of cables, you get a 10cm Cold Cathode tube to light up the card and copies of Splinter Cell – Pandora Tomorrow, Prince of Persia – The Sands of Time and Cyberlink's PowerDVD 5 2CH.

**RRP** £132.78 (£113 ex VAT)
**PRODUCT INFORMATION** www.ebuyer.com
★★★★☆

## Enermax EG851AX-VH 660W

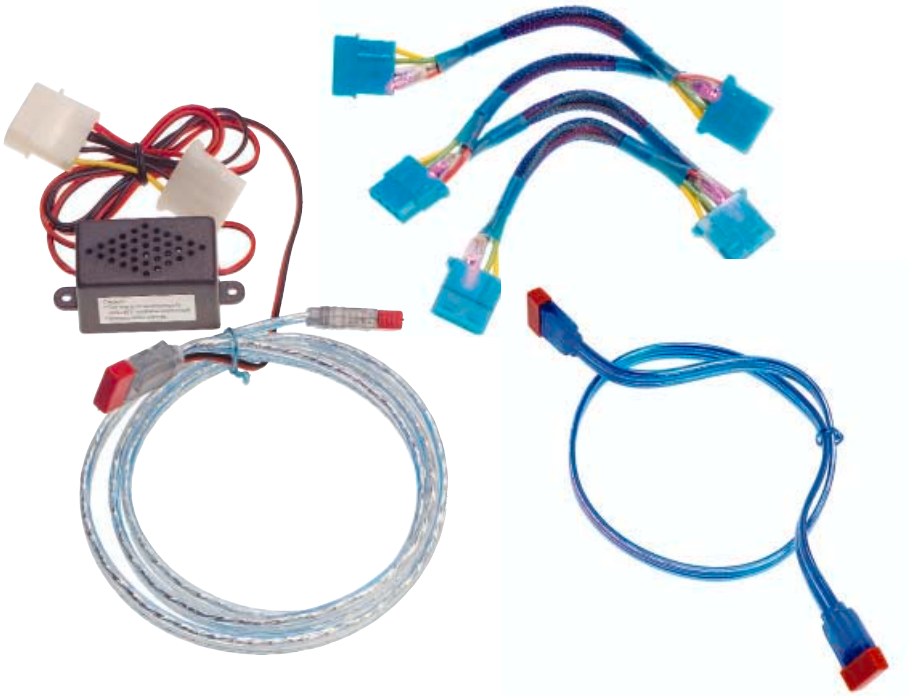
If you're putting together a dual Xeon or AMD workstation, or just want a huge amount of power and have a large case and deep pockets, the EG851AX-VH 660W from Enermax is worth serious consideration.

Rated at 660w, the unit features full circuit protection (Over Current, Over Voltage, Under Voltage, Over Load and Short Circuit), and comes with cable sets for both Intel's SSI EPS12V version 2 and AMD's ATXGES power form factors. Two 8cm thermally controlled fans provide cooling and reduce noise levels.

Despite being made of aluminium to help with heat dissipation, the EG851AX-VH 660W weighs in at a hefty 3.05kg and is Extended PS/2 size – making it larger than normal PC power supplies, hence the need for a large case.

**RRP** £143.96 (£122.52 ex VAT)
**PRODUCT INFORMATION** www.overclock.co.uk
★★★★☆

## AC Ryan accessories



Want to add a bit more pizazz to your PC's internals? AC Ryan offers a horde of modding items designed to give the inside of your PC that 'bling' factor.

To start with, its UVblue Sata cable appears silver under normal lighting conditions but turns blue under UV lights, while the Blue Neon Sata cable comes with its own power inverter and will light the way to your data. Even boring Molex connectors come in for the AC Ryan treatment – the UV LED Molex Quad splitter features five UV LEDs to brighten up any system.

**RRP** Sata UVBlue cable £6 (£5.10 ex VAT);
Sata Blue Neon cable £12 (£10.21 ex VAT);
UV LED splitter £4 (£3.40 ex VAT)
**PRODUCT INFORMATION** www.komplett.co.uk
★★★☆☆

## Acousti Acoustipack SFF

As you may have gathered from the name, this is a soundproofing kit for SFF (small form factor) PCs.

It's made up of three 330 x 216mm sheets, each comprising a 1mm dense acoustic barrier and 3mm of acoustic foam. Easy to cut and shape, the kit can be used for a wide range of SFF cases.

**RRP** £17.63 (£15 ex VAT)

**PRODUCT INFORMATION** www.quietpc.com/uk

★★★☆☆

## Zalman VF700-CU

Zalman has a reputation for making coolers that not only work well but look good too. The VF700-CU is no exception. It's a replacement cooler for all AGP and native PCI-E graphics cards that have pushpin holes for mounting the original GPU cooler.

Weighing in at 270g, the VF700-CU is constructed from copper, but a lighter (180g) aluminium and copper version, the VF700-ALCU, is also available. Both include individual heatsinks for the memory chips.

Unfortunately, neither can be used with Nvidia's PCI-E range of cards because of the HSI bridging chip, which needs additional cooling.

**RRP** VF700-CU £29.38 (£25 ex VAT)
VF700-ALCU £23.50 (£20 ex VAT)

**PRODUCT INFORMATION** www.quietpc.com/uk

★★★★☆

## Aerocool Gatewatch fan controller

Dominated by a huge LED, which has a choice of three backlight colours, the Gatewatch controller takes up two 5.25in drive bays and comes in either black or silver.

It can control up to four fans and four temperature probes, all complete with alarms, and just for good measure it can also be used to manage your system's volume.

The LCD shows fan and temperature channel selections, fan speeds, temperatures, alarm warnings, volume level and sound equaliser, computer status and a 24-hour clock.

**RRP** £35.18 (£29.94 ex VAT)

**PRODUCT INFORMATION** www.overclock.co.uk

★★★★☆

## Gecube X850XT Uniwise

Although ATI launched the X850XT graphics chip a while ago, retail cards using this are still thin on the ground. Gecube's X850XT Uniwise is based on the reference ATI design; it features a 520MHz core and a 1.08GHz (540MHz DDR) memory clock, with 16 pixel pipelines, a 256bit memory bus and 256MB of DDR3 memory.

To keep the GPU cool, Gecube has used its own heatsink and fan with a combination of copper fins and heatpipe technology. This keeps the card as a single-slot solution, unlike the reference design which takes up two slots worth of space.

As you might expect from a card at this price, it's a top performer. At a resolution of 1,024 x 768 it gave a 3Dmark03 score of 13,080, a 3Dmark05 score of 4,994 and 77.33fps in Far Cry in our test system.

**RRP** £376 (£320 ex VAT)

**PRODUCT INFORMATION** www.savastore.com

★★★★★



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ATI Radeon X850X review
See www.pcw.co.uk/products/hardware/1161349

DUAL-CORE GRAPHICS CARD

# Gigabyte GV-3D1

## Great performance with Nvidia technology

There have been several attempts to produce a dual-core graphics card for the consumer market, but so far most have failed. Hoping to change this, Gigabyte has produced the dual-engine GV-3D1 using Nvidia's SLI (scalable link interface) technology.

Based around two Geforce 6600GT processors, each with 128MB of video Ram and a 128bit bus, the 3D1 uses SLI to share work between cores and beef up graphics performance. But this doesn't mean it's a 256MB card with a 256bit bus, as each chip can only work with its own memory.

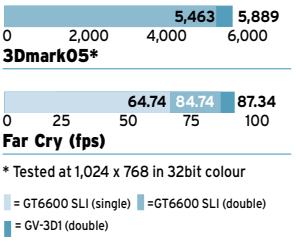
The card needs a compatible motherboard to divide the bandwidth of the 16X PCI Express slot between the two chips. Currently the only option is Gigabyte's K8NXP-SLI, and the two are being bundled together.

The core speed of the 3D1 remains the same as a standard 6600GT at 500MHz; memory speed has been boosted to 1,120MHz. A copper heatsink covers most of the top of the card and features two fans. There's also an auxiliary power connector due to the power requirements of two chips.

We tested the 3D1 against a system using two 6600GTs in an SLI board and it scored 12,963 in 3Dmark03 compared to 12,167 for the two-card setup. The 3D1 scored 5,889 in 3Dmark05, outpacing the 5,436 scored by the two cards. In Far Cry, the 3D1 achieved 87fps – 20 frames more than a single 6600GT card.

**Simon Crisp**

### PERFORMANCE




### DETAILS

**RRP** £381.82 (£324.95 ex VAT) card and motherboard bundle
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Overclockers 0870 443 0880
**www.overclockers.co.uk**
**SPECIFICATIONS**
Dual Geforce 6600GT chips • Core speed 500MHz • 256MB DDR3 (2 128MB 1,120MHz) • VGA, DVI, video-out • DirectX9 • Includes K8NXP-SLI motherboard • PowerDVD 5
**PROS** Blistering performance
**CONS** Only works with bundled motherboard at present
**VERDICT**
**Gigabyte's GV-3D1 offers great performance with one major drawback – you'll have to replace your motherboard to use it**

| | |
|---|---|
| FEATURES | ★★★★☆ |
| PERFORMANCE | ★★★☆☆ |
| VALUE FOR MONEY | ★★★★☆ |
| OVERALL | ★★★☆☆ |

GRAPHICS CARD

# Asus Extreme AX850XT PE

## Hot graphics card with a dual-slot cooler

Just as graphics cards using the ATI Radeon X850XT are starting to appear in shops, Asus gives us the 256MB Extreme AX850XT PE, a PCI Express board based around the Platinum Edition of the chip.

Internally the X850XT PE is like its predecessor, the X800XT PE, with 16 pixel pipelines and six vertex shader units. But the core and memory clock speeds have been raised: the core clock has jumped to 540MHz, while the memory speed has risen to 590MHz DDR.

The AX850XT PE is the first Asus ATI card to have a dual-slot cooler, as used by rival Nvidia. A copper heatsink takes the heat from the core and memory chips, while a large fan forces hot air through a plastic duct and out of the top of the two-panel end plate. The AX850XT PE has dual DVI-I and single S-video outputs. Two VGA adapters are provided.

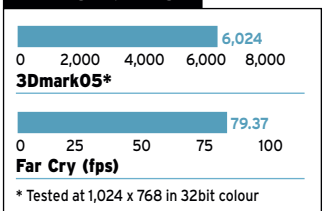
When first switched on, the fan makes quite a racket, but this soon dies down and is hardly noticeable even when playing heavy-duty 3D games.

Performance is great, with the card scoring 13,110 and 6,024 in 3Dmark03 and 05 respectively. Running the default demo of Far Cry at the same resolution with maximum details gave 79.37fps – even at 1,600 x 1,200pixels with 4x anti-aliasing and 4x anisotropic filtering, the game kept at very playable 47.36fps.

Asus bundles copies of Joint Operations: Typhoon Rising and Xpand Rally in the box, plus Asus DVD XP, Power Director 3 and Media Show.

**Simon Crisp**

### PERFORMANCE




### DETAILS

**RRP** £457.08 (£389 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Scan **www.scan.co.uk**
**SPECIFICATIONS**
Core clock 540MHz • Memory clock 1.18GHz (590MHz DDR) • 256MB DDR3 Ram • 16 pixel pipelines; DirectX9 • Dual DVI (dual VGA adapters), 2 DVI-VGA adapters • S-video to HDTV cable, S-video to composite Vivo, S-video cable, composite cable • Power cable
**PROS** Top-notch performance
**CONS** Two-slot cooling solution; expensive
**VERDICT**
**The Extreme AX850XT PE is a welcome addition to Asus' line of graphics cards. An excellent choice, if you can afford it**

| | |
|---|---|
| FEATURES | ★★★★☆ |
| PERFORMANCE | ★★★★★ |
| VALUE FOR MONEY | ★★★☆☆ |
| OVERALL | ★★★☆☆ |

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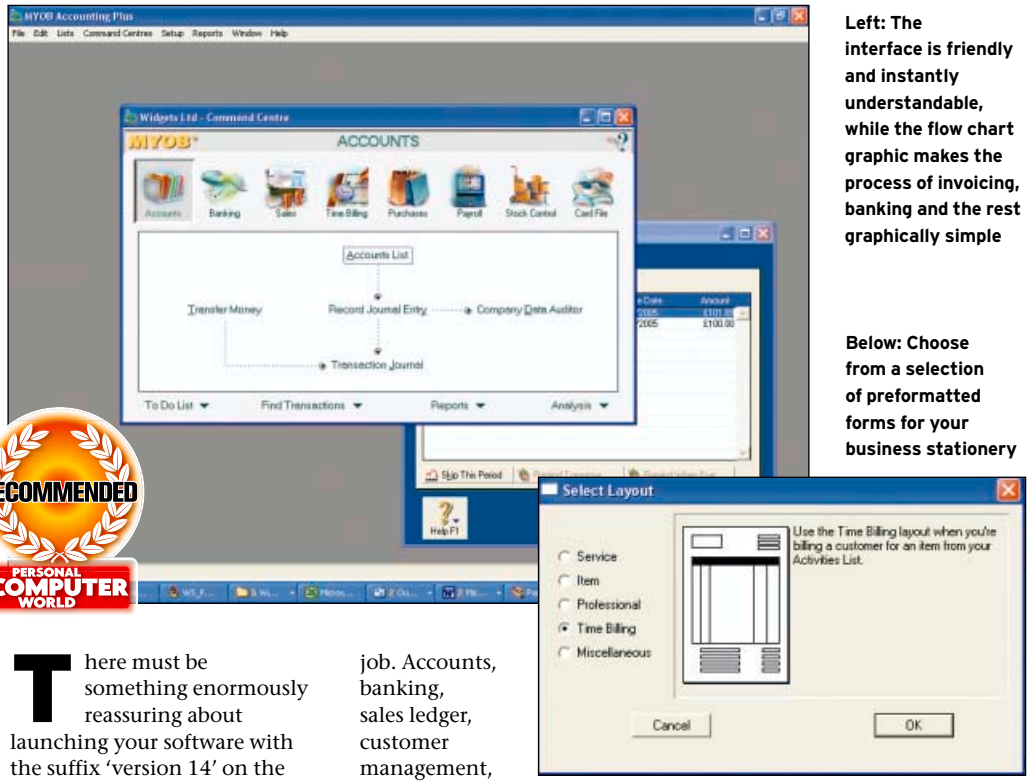
ACCOUNTING SOFTWARE

# MYOB Accounting Plus 14

## Get to grips with your company finances the easy way




**Left: The interface is friendly and instantly understandable, while the flow chart graphic makes the process of invoicing, banking and the rest graphically simple**

**Below: Choose from a selection of preformatted forms for your business stationery**

RECOMMENDED
PERSONAL COMPUTER WORLD

There must be something enormously reassuring about launching your software with the suffix 'version 14' on the end. Either you've been pulling the wool over a lot of eyes for a lot of years or you've got your product right.

MYOB has been well-respected accounting software for a long while now. A more serious contender than the higher-end versions of Microsoft Money, and a cheaper prospect historically than the Sage packages, it has competed right there in the middle with Intuit's Quickbooks. A word of caution is required. This is not personal finance software, but if you're running a small or medium-sized business, you want to keep financial control, run your payroll and you don't want to employ a full-time bookkeeper, then you're in luck.

There are three price points for MYOB. Businessbasics retails at £79 and will do your basic bookkeeping. Accounting comes in around £235 and adds stock control and job management to the basic financial tools. Accounting Plus ambitiously takes on the whole job. Accounts, banking, sales ledger, customer management, purchase ledger and payroll are in place. Job management and costing are in place, with a 'time billing' feature (because you need to know the cost and therefore the bottom line on every job you do).

There is also an accounting 'to do' list and you can run graphs and reports, feeding financial information back into the business. Nobody wants the accountants to run the firm (unless it's a firm of accountants) but the philosophy is to take a continuous pulse of how the business is doing. The business world is full of companies which thought they were doing fine but went bust, not because they ignored the bottom line but because they didn't know how to find it.

We're delighted to see that MYOB hasn't played around with the look and feel. All versions of the package are not only quick and easy to install, but bring you straight into the almost comically simple interface. The software has eight areas: accounts, banking, sales, time billing, purchases, payroll, stock control and the card file. Click on one and an idiot-proof flow chart shows you the process. So, time billing is a simple matter of Enter Activity Slip > Prepare Time Billing Invoice > [log it in the] Transaction Journal and so on.

We think MYOB has hit the button here. Accounting is basically a collection of transactions, each a very simple series of flow processes, with double entry ensuring it adds up and is seen to add up. Where the confusion comes is that there may be thousands of these transactions, the visible evidence being the pile of paper on your desk.

So the package keeps things simple. The lower half of the interface is dedicated to finding stuff, and working with the figures already in the system. So we have the to do list, find transaction, reports, analysis and that's it. The figures go in at the top of the page; they come out at the bottom. Drill within of course and things get a lot more sophisticated.

We're also very impressed by the way MYOB has beefed up the reports. Information is everything and you now have access to it all, including future dated transactions, recurring transactions lists and recurring pay information.

We won't list them all, but the point is that MYOB is now allowing you to sort the information you're acquiring in detail, as your firm amasses more business transactions.

A simple interface conceals powerful and useful database muscle. This means that, as well as performing day-to-day money management, MYOB Accounting Plus 14 will let your company see where it's going, avoiding the rocks on the way.

**John Rennie**

### DETAILS

**RRP** £349.99 (£297.86 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Myob 0845 130 3975
**www.myob.com**
**SYSTEM REQUIREMENTS**
Pentium 200MHz PC or compatible • Minimum 32MB of Ram • Windows 98 or later • 50MB of hard disk space for installation, plus 35MB per company file • 16bit colour monitor Internet access and Internet Explorer 5 or later
**PROS** Tried, tested and tweaked still further. Easy to use and absolutely reliable
**CONS** Online support could be better. This is where the more expensive Sage really wins out
**VERDICT**
**A winning combination of power and simplicity. This is a painless way for non-accountants get to grips with the company books**

| | |
|---|---|
| FEATURES | ★★★★★ |
| EASE OF USE | ★★★★★ |
| VALUE FOR MONEY | ★★★★☆ |
| OVERALL | ★★★★☆ |

ASUS recommends Microsoft® Windows® XP Professional for Mobile Computing.

intel inside
centrino
MOBILE TECHNOLOGY

comfort: The Power of Possibilities

## The Slim, Lightweight 15-inch Notebook

The ASUS V6000V is an ultra slim 15-inch notebook that is lighter than most of the 14-inch notebooks available in the market. It is characterised by a refined and elegant design that represents the most comprehensive solution that not only offers functionality but also cutting edge performance. The sleek V6000V is the modern symbol of success and pointer of style for urban elites.

Comfort: The Power to Change the World

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  - Intel® Pentium® M processor 700 sequence • Mobile Intel® 915GM Express Chipset
  - Intel® Wireless/PRO Network Connection 2915 a/b/g
- Microsoft® Windows® XP Home/Professional

The New Mobile Processing Platform

ASUS®
HEART OF TECHNOLOGY

- 15"XGA/SXGA+
- ATI Mobility™ Radeon™ X600 ( PCI Express )
- Bluetooth™(optional)

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DVD AUTHORING

# Roxio MyDVD and Slideshow

## Create impressive DVDs in a flash without complications

You can add music and customise presentations

RECOMMENDED
PERSONAL COMPUTER WORLD

Following its recent purchase by Sonic Solutions, Roxio is looking to cement its already strong position in the media creation market with the release of MyDVD and Slideshow. With a very competitive price, the package is ideal for home users looking to make their own DVD presentations and videos.

Roxio has gone to great lengths to make MyDVD and Slideshow as easy to use as possible. On startup it gives you instant access to options that let you create a new project, perform a quick Direct-to-Disc transfer, edit a current disc or open a previously saved project.

If you have VHS tapes and just want to get the video onto a DVD, selecting Direct-to-Disc simplifies the whole process. Select one of a range of templates and the package will import video from any source, such as a video recorder, and burn it straight to disc. It takes less than a minute to get things going.

However, the package is capable of much more. Click on the New Project option and you'll be taken into the main interface. Roxio has used large buttons and clear icons to keep things uncluttered, and it doesn't take long to work your way around the various options.

**Editing options are limited but this means things aren't too difficult**

You can add video to a project simply by importing clips already stored on your PC – each file will automatically appear as a new menu option on the DVD title screen. Alternatively, if you hook up your video camera, you can capture footage directly with the appropriate hardware.

It's important to realise MyDVD and Slideshow isn't a video-editing package. The only form of editing available is the ability to trim individual clips. This is a little restrictive, but at this price you can't expect any advanced video-editing tools, and it does make the whole process very uncomplicated.

Once you've imported your clips, a range of customisable templates lets you spice up the presentation of your DVD menus. You can use moving images as backgrounds, animate buttons, and include audio tracks for each sub-menu to give a truly Hollywood look. As its name would suggest, MyDVD and Slideshow is also able to create impressive slideshows of your favourite images and burn them to CD or DVD. With a maximum of 1,000 images per slideshow, you can add an audio track to play alongside your photos and even time the slideshow to complete at the same time as the music.

Once you've decided which video to include, chosen the audio and worked out how you want the menus to look, it's time to burn everything to a DVD. Hit the large red Burn button and you'll be taken to the pre-burn menu, where you decide how many copies you want, which optical drive to use and at which speed to write the data. Then it's simply a case of clicking the OK button to start the encoding and burning process.

MyDVD and Slideshow is an OpenDVD-compliant application. This means it allows you to open and edit discs that have already been burned using MyDVD or another OpenDVD-compliant package. You'll be able to add more content, re-edit it and then burn it to be viewed on a standard DVD player.

After using MyDVD and Slideshow for some time, we were extremely impressed with its sheer ease of use. Menus are well laid out and easy to understand and, if you don't want to use the advanced features, it takes next to no time to burn everything to a DVD or CD. Even creating a flashy title menu with moving images and audio was a quick process.

If you want to burn video, audio and images to DVDs and CDs with the minimum of fuss, Roxio MyDVD and Slideshow is worth a look. At this price it's a real bargain.

**Will Stapley**

### DETAILS

**RRP** £29.99 (£25.52 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Roxio **www.roxio.co.uk**
**SYSTEM REQUIREMENTS**
Windows 98SE/2000/XP • 800MHz Pentium III • 128MB Ram (256MB Ram for video capture) • 10GB hard disk • DVD/CD writer
**PROS** Amazing value for money; easy to use
**CONS** Lacks advanced functionality
**VERDICT**
**Great for home users who want to burn impressive video and slideshow DVDs quickly**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **EASE OF USE** | ★★★★★ |
| **VALUE FOR MONEY** | ★★★★★ |
| **OVERALL** | ★★★★☆ |

ASUS recommends Microsoft® Windows® XP Professional for Mobile Computing.

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centrino™
MOBILE TECHNOLOGY

# comfort: Open Up and Unlock A World of Possibilities

The W3000A offers total vision satisfaction for both work and play. The widescreen is perfect for entertainment applications and multi-tasking is now possible with the W3000A's option of displaying two windows simultaneously. The new Color Shine display technology further delivers higher brightness and rich color contrast, making the W3000A great for both work and entertainment. Open up the ASUS W3000A and unlock a world of possibilities.

Comfort: Just Stretch Out

- Intel® Centrino™ Mobile Technology
  - Intel® Pentium® M processor 700 sequence
  - Mobile Intel® 915GM Express Chipset
  - Intel® Wireless/PRO Network Connection 2915 a/b/g
- Microsoft® Windows® XP Home/Professional
- Bluetooth™ (optional)

■ 14.0"Widescreen for Cinematic Entertainment Enjoyment

■ Unique Concealed Bamboo Battery Hinge

The New Mobile Processing Platform

ASUS®
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www.asus.com

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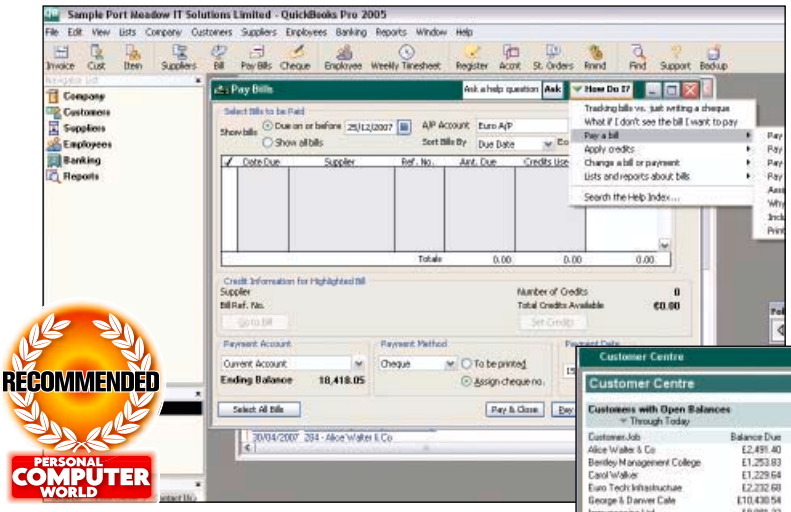
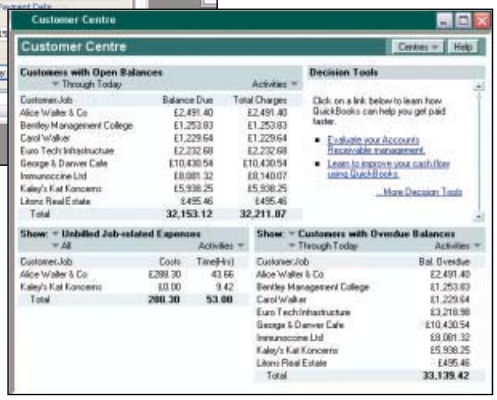
SMALL BUSINESS ACCOUNTING

# Intuit Quickbooks 2005 Pro

## Extra features help make short work of small business accounts




**Left: Any feature within the software can be explained in more detail by clicking on the 'How do I?' button and viewing the Follow Me Help window**

**Below: The Customer Centre takes you directly to the information you need to view about your clients**

The Quickbooks range of small business finance software has had a revamp for 2005, with the introduction of three products: Quickbooks Regular, Pro and Accountant 2005. Here we look at the Pro version to see what new features have been added to ease the headache of bookkeeping for small businesses.

Quickbooks 2005 Pro is aimed at users with some IT knowledge running a small business. It can handle a staff ranging from just one employee to over 10, and cope with registered or unregistered companies based in a single location, be it an office or at home, or multiple locations. In fact, Pro covers the widest range of needs of any of the Quickbooks products.

It is worth noting that, following the demise of Intuit's personal finance software, Quicken, at the beginning of this year, there is also a simplified version of Quickbooks 2005 called Simplestart. This is targeted at individual users with little experience of accounting or technology, although it's designed for start-up businesses. For those who want to stick with Quicken, Intuit will support this until January 2006.

Although Quickbooks Pro demands some understanding of bookkeeping, it has been made as simple to use as possible and the interface has been redesigned to make it more intuitive.

The find feature has been updated to make it easier to search for customers by name, date or amount, which is a welcome addition. Report navigation has also been enhanced and you can now easily search for the report you want by type and then search within it for the information you actually need.

All the core features are explained using interactive tutorials. These are full multimedia productions, with an English-accented voice-over and muzak-style soundtrack, which you can turn off. Once you have tackled these, there is also an easily accessible help window that takes you to support online.

A new offline 'Follow Me Help' feature can be accessed by clicking on the 'How do I?' button. It's context sensitive and changes as you change task and can be used to guide you through all the features, offering in-depth explanations of complex operations such as VAT returns and payroll.

If you are more familiar with the software you can skip straight to the Customer Centre, which provides an at-a-glance look at all your client details. This information can also be viewed in the Company Centre. Once you're used to working with the software, you can customise it to better meet your needs, swapping icons on the toolbar for those most frequently used.

While many of the changes made to Quickbooks 2005 Pro are operational, there are a few new functions to encourage users to upgrade too. The most important is support for electronic staff payments via Bacs, which is only found in the Pro and Accountant versions. Using Bottomline's Bacstel-IP, users can carry out payments via the web. But any business wishing to use this service will have to pay £25 per month for up to 30 transactions and any further transactions cost more.

Another paid-for extra is the electronic filing of payroll returns, which is available in all but the Simplestart products. This costs £99.95 per year, but by filing returns via the Internet companies are entitled to the Inland Revenue's incentive scheme. This pays out £825 over five years, more than covering the outlay.

The final new addition is the support for online card payments using Worldpay, which allows you to accept payment from all major credit and debit cards. This incurs a £100 setup fee, a £100 annual subscription and extra transaction fees.

Barclays Bank customers will be pleased to see that Quickbooks 2005 can now be fully integrated with its online banking services. This means that bank statements can be automatically reconciled, rather than having to be manually input.

Comprehensive yet easy to use, Quickbooks 2005 Pro is more than sufficient for managing the accounts needs of most small businesses. Professionals may also want to consider the Accountant version, which adds the option to work remotely on company files.

**Laura Jones**

### DETAILS

**RRP** From £299.95 (£255.28 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Intuit 0845 450 7220
**www.quickbooks.co.uk**
**SYSTEM REQUIREMENTS**
Windows 98 or later • 200MHz Pentium processor • 64MB of Ram • 230MB hard disk space • Mapi-compliant email program; Word, Excel and Outlook 97 or later; ACT 3.08 or later for integration
**PROS** Support for electronic payments, efiling and online card processing; intuitive to use
**CONS** Extra electronic features incur costs; takes time to master
**VERDICT**
**This new version has enough features to make an upgrade worth considering**

| | |
|---|---|
| **FEATURES** | ★★★★★ |
| **EASE OF USE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

The ASUS W5000A's stylish design for modern sophistication is perfect for today's urban metropolitans who demand more than functionality in digital devices. No matter where you are, the W5000A's built-in 1.3 mega-pixel 180° swivel webcam will bring your vision to wherever you wish to be. Built-in microphone and the exclusive LiveFrame software, especially developed for the W5000A, allow easy capturing, recording and playing of photos and videos. The new Color Shine display technology further delivers higher brightness and rich color contrast, making the W5000A the best personal stage to see and be seen.

Comfort: Swivel 180° for Total Image Capturing

- Intel® Centrino™ Mobile Technology
  - Intel® Pentium® M processor 700 sequence
  - Intel® 915 GM express chipset
  - Intel® Wireless/PRO Network Connection 2915 a/b/g
- Microsoft® Windows® XP Home/Professional

■ Built-in 180° swivel webcam

■ Travel light and instyle

The New Mobile Processing Platform

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- 12.1"WXGA
- ASUS LifeFrame video capturing software
- Bluetooth™(optional)

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PHOTO MANIPULATION

# Realviz Stitcher Express

## Value-for-money panoramic application

**Stitcher Express makes light work of a 30-image, multi-row panorama to show your photos in one vista**

Panorama software – used to stitch several side-by-side digital photos into one sweeping vista – tends to be professional, complex and expensive, or it's cheap, easy to use and lacking in features.

But with the launch of Stitcher Express, Realviz has produced a relatively affordable application with some real muscle.

Stitcher Express is a slimmed-down version of Stitcher 4, Realviz's professional panorama package. It retains all the important features, most notably the ability to stitch multi-row panoramas and render cubical and spherical Quicktime VR formats, providing an immersive 360º horizontal and 180º vertical view.

Its easy-to-use drag-and-drop interface is equally well suited to producing a single-row cylindrical panorama, or just stitching together a few handheld shots to produce a super-wide angle image.

We tested the product's capabilities by feeding it a difficult multi-row stitching job with lots of 'problem' images.

It performed spectacularly well, stitching together 30 individual photos without a hitch.

The cylindrical, spherical and snapshot render modes can be exported as a layered .psd file with layer masks, so you can edit individual layers on the rendered file in Photoshop or any other image editor that supports layered Photoshop files.

This is more expensive than other budget panorama applications, but Stitcher Express is every bit as easy to use and its professional features make them look like toys by comparison.

**Ken McMahon**

### DETAILS

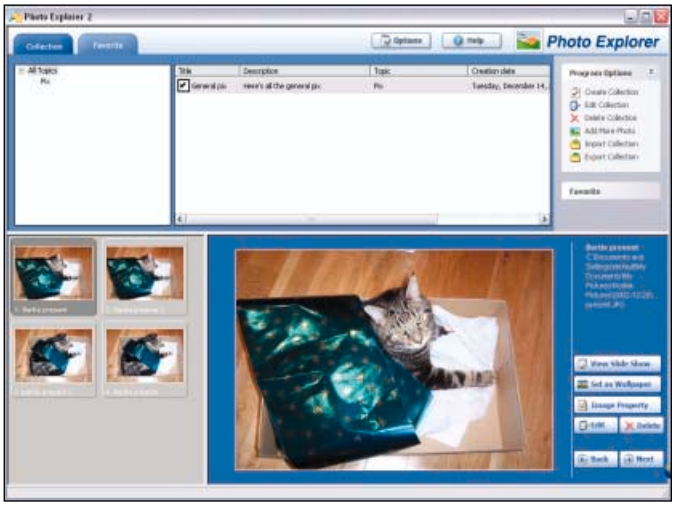
**RRP** £117.50 (£100 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Realviz +33 4 92 38 84 60
**www.realviz.com/products/stx/index.php**
**SYSTEM REQUIREMENTS**
Pentium III 500MHz • 256MB of Ram • OpenGL compatible 1,024 x 768 24bit graphics card • 50MB free disk space
**PROS** Powerful features; multi-row stitching; QTVR output
**CONS** No panorama conversion
**VERDICT**
**All the best bits of Stitcher 4 at a fifth of the price**

| | |
|---|---|
| FEATURES | ★★★★★ |
| EASE OF USE | ★★★★☆ |
| VALUE FOR MONEY | ★★★★☆ |
| OVERALL | ★★★★★ |

WINDOWS PERFORMANCE ENHANCER

# Allume BoostXP

## Tweak and optimise your system




**BoostXP provides you with an easy way to turn your own photos into desktop wallpaper or a slideshow**

While Windows XP already includes plenty of tools to help keep your PC protected and in tip-top condition, some of these can be hard to find or difficult to use – especially such things as the Registry. BoostXP by Allume, formerly known as Aladdin Systems, is designed to make optimising your system that little bit easier.

You can use BoostXP on a superficial level to change the way Windows looks, choosing icons to represent different folders with customised tool tips to tell you what's inside, create your own wallpaper and screensavers and configure your Start menu and taskbar. Despite the ability to already do this with Windows, the package does make it easy, even for novice users.

The program also goes under the skin of your PC, allowing you to clear out junk from the Registry. There really isn't quite enough explanation about what is being removed, but the package does create a backup before you start to protect you if you do delete something vital.

There's also System Cleaner that bins all the junk items PCs have a tendency to accumulate, including cache and temp files.

BoostXP also includes security features, such as the ability to turn off automatic password saving in Internet Explorer and block access to certain programs or Control Panels and Admin tools.

You also get advice on performance tweaks and help with putting this into practice.

While it won't do anything for power users, BoostXP is a handy tool for tweaking and polishing Windows.

**Laura Jones**

### DETAILS

**RRP** £19.99 (£17.01 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Koch Media
01256 707 767
**www.allume.com**
**SYSTEM REQUIREMENTS**
Windows XP/2000
**PROS** Easy to use; inexpensive
**CONS** You can do as much in Windows; poor feature explanations
**VERDICT**
**BoostXP doesn't do much that you can't already do in Windows, but it does make tweaking your system a little easier**

| | |
|---|---|
| FEATURES | ★★★☆☆ |
| EASE OF USE | ★★★★☆ |
| VALUE FOR MONEY | ★★★★☆ |
| OVERALL | ★★★☆☆ |

# A Perfect Blend of Audio/Video Performance and Style

- Groove to your favorite Beethoven's 9th Symphony played by a full orchestra or bass-heavy hip-hip beats.
- The smooth hidden hinge design eliminates the creaky sound when opening and closing a notebook and delivers a clear view of the screen.
- With no gap dividing the touch pad and palm rest, annoying dust accumulation is a thing of the past.
- A latchless design allows you to open the notebook easily without sacrificing display protection.
- These semi-invisible fast keys are stylish and practical, give your full attention to the screen.

**ASUS recommends Microsoft® Windows® XP Professional**

ASUS®

HEART OF TECHNOLOGY

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W1

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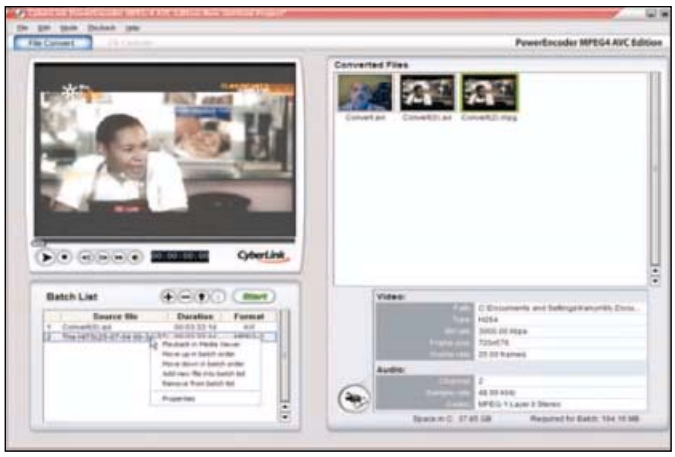


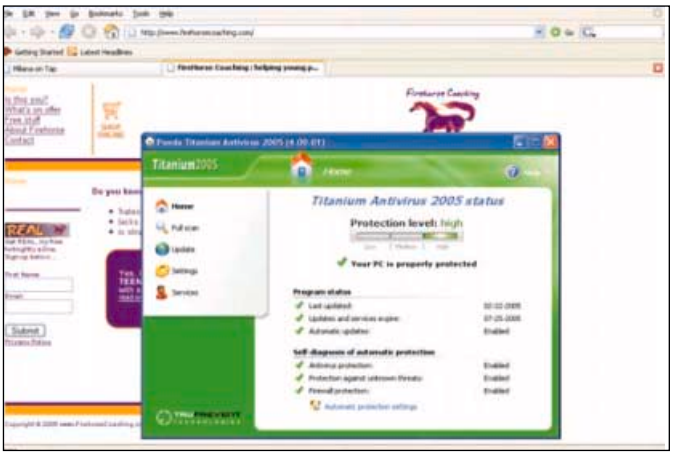

## Cyberlink Power Encoder Mpeg-4/AVC

Cyberlink's latest product showcases the H.264 mpeg4/AVC codec, designed to offer mpeg2 quality video at about half the data rate. It's a codec that's part of the HD-DVD and Blu-Ray standards.

Power Encoder is a simple program for converting a range of video formats (except Quicktime and wmv) to mpeg1, mpeg2, DivX or H.264. It also captures directly from DV camcorders to allow on-the-fly compression of DV material. The interface is uncluttered, but there are full advanced configuration options for all the included codecs. You can create custom conversion profiles in addition to using the numerous presets. The full DivX Pro 5.2.1 codec is also included.

**Kelvyn Taylor**

**RRP** £33.02 (£28.10 ex VAT) download
**PRODUCT INFORMATION** **www.gocyberlink.com**
**PROS** Simple to use; free DivX Pro codec
**CONS** Manual a little sparse for novices
★★★★☆




## Panda Titanium Antivirus 2005

Panda's package includes anti-virus software, protection from spyware, plus some firewall features. Truprevent technology spots new viruses before they're added to the definitions database.

The program performed a thorough scan of our test PC but was often confused about which programs were threats. Fortunately this was easily resolved with a few tweaks.

This is an effective, easy-to-use package that should suit most home users. Its yearly licence renewal rate is higher than some competitors, but its extra features are reassuring.

**Rory Reid**

**RRP** £29.99 (£25.52 ex VAT) (Boxed, one-year subscription)
**PRODUCT INFORMATION** Panda Software 0870 444 5640
**www.pandasoftware.co.uk**
**PROS** Intrusion prevention, anti-spyware, virus-specific firewall functions
**CONS** Alerts are initially intrusive
★★★★☆

## Roxio Record Now Deluxe 7

Record Now Deluxe 7 is the latest version of the popular CD and DVD burning software.

Along with dual-layer writing, the new edition includes support for mpeg4 audio and wm-drm files. The interface is task-based, with simple options to copy discs, archive documents and emails, create images and rip CDs to mp3 files for creating custom compilations.

The package also works with HP's new Lightscribe technology, allowing those with a compatible drive to design and burn professional-looking labels directly onto the disc.

**Chris Cain**

**RRP** £19.99 (£17.01 ex VAT)
**PRODUCT INFORMATION** **www.roxio.co.uk**
**PROS** Easy to use; good range of features
**CONS** Annoying 'upgrade to this...' ad links
★★★☆☆

## Abbyy Scan To Office

Scan To Office lets you turn your paper documents and image files into editable Microsoft Office files or Outlook email attachments. In theory, the documents have the same look and feel as the originals.

A clear and intuitive interface makes things easy to get to grips with, and the package worked well in tests with an HP Scanjet 3530c scanner. Scanning multi-page documents isn't a problem as the package automatically saves all pages as one file, and the software recognises 37 languages.

**Anna Lagerkvist**

**RRP** £34.99 (£28.87 ex VAT)
**PRODUCT INFORMATION** Abbyy 0870 027 1190
**www.abbyy.co.uk**
**PROS** Easy to use; affordable
**CONS** Some formatting lost
★★★★☆

# An Industrial Design Masterpiece

## ASUS WL-530g Pocket Wireless Router Wins G-Mark Validation

With the one-of-a-kind compact design, the ASUS WL-530g wireless router recently received Japan's G-Mark, the world's foremost validation for high-quality industrial design. This pocket router supports both the IEEE 802.11g and IEEE 802.11b standards to offer high-speed and flexible wireless networking.

802.11g is the new mainstream standard for wireless networking. It is an extension of 802.11b and operates in the 2.4GHz frequency through OFDM (Orthogonal Frequency Division Multiplexing) technology, raising data bandwidth up to 54Mbps. Wireless devices based on 802.11g is also backwards compatible with those supporting 802.11b.

The WL-530g perfectly complements existing wireless and wired LAN (local area networks) by providing users with mobility. It incorporated AP (access point) functions as well, meaning you can access the network wirelessly with any wireless-capable devices. The router also included network gateway features, which enables you and your family or coworkers to share the same broadband modem and the same ISP (Internet service provider) account simultaneously.

### System requirement

To set up a wireless LAN with the WL-530g requires the following:

・ADSL/cable modem and an account for broadband Internet services

・An Ethernet card with RJ-45 connection (10Base-T or 10/100Base-TX) to link LAN-ready computers

・A mobile computing device with built-in 802.11g/b functions

・Operating system needs to include TCP/IP communications standards and network browser

Fits easily on your palm

### Product features

The WL-530g completely changes the bulky perception of wireless devices for IP sharing. With a lightweight and compact design, you can easily bring it to meetings, study groups or anywhere in between when network sharing is needed.

Pocket-size WL-530g won G-Mark

It is equipped with four 10/100Base-T Ethernet ports to sync up with a PC and a Hub to extend the network. Even notebooks and PDAs can enjoy the convenience of wireless networking through the WL-530g's DHCP (dynamic host configuration protocol) function, which automatically assigns IP addresses to client devices. Furthermore, for Internet access, all computers within the LAN can access the Internet both wired and wirelessly via the same external IP address.

Unlike other routers that offer both router and base station modes, the WL-530g intelligently monitors the WAN (wide area network), detects whether the broadband modem is properly connected, and automatically switches between base station (if not connected) and router (if connected) modes. No more complicated configurations. To change settings, use simple web browsers on any of the computers within the wireless LAN to reconfigure the WL-530g.

Besides the NAT (network address translation) firewall, which keeps internal addresses hidden from the outside, the WL-530g also provides SPI (Stateful Packet Inspection), an even more powerful firewall system.

**Other security features include:**

The WL-530g integrated the ACL (access list), permitting users to connect to broadband Internet through the wireless router without worries. On top of WEP encoded technology, the WL-530g also included the next-generation WPA-PSK 2 (Wi-Fi-Protected Access-Preshared Keys) and TKIP (Temporal Key Integrity Protocol) for those who demand state-of-the-art network security.

With protection against unauthorized access and filter mechanism for blocking inappropriate URLs, the WL-530g is ideal for both office and home environments for setting up a wireless network.

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# Best Buys

BEST BUY PERSONAL COMPUTER WORLD

## YOUR GUIDE TO TODAY'S TOP PRODUCTS >>

### HIGH-END PC

**Advent T9420**

**REVIEW** March 2005, p56 **RRP** £1,599
(£1,460 ex VAT) **PRODUCT INFORMATION**
PC World 08705 464 464 **www.pcworld.co.uk**

This system offers a high specification and, at £1,599, it's great value. If you're after a PC with a multimedia focus that can also handle the latest games and run rings around office applications, it is difficult to beat.

### BUDGET PC

**Intellect Prodesk A64/28005**

**REVIEW** May 2005, p104 **RRP** £499
(£424.68 ex VAT) **PRODUCT INFORMATION**
Intellect 08701 225 590 **www.intellect.uk.com**

If you want a budget PC, you can't go wrong with this Intellect. It might have integrated graphics, but the Athlon 64 2800+, 512MB Ram and stunning Sharp 17in monitor more than make up for it.

### MEDIA CENTER PC

**Evesham E-box S**

**REVIEW** March 2005, p103 **RRP** £999
(£850.21 ex VAT) **PRODUCT INFORMATION**
Evesham 0870 160 9500 **www.evesham.com**

A refined version of the previous Evesham E-box, this features dual digital TV tuners, a quieter cooling system and a stylish design. At under £1,000, it's one of the best Media Center PCs currently available.

### CENTRINO NOTEBOOK

**Sony VGN-FS115Z**

**REVIEW** April 2005, p58 **RRP** £1,292
(£1,099.57 ex VAT) **PRODUCT INFORMATION**
Sony 08705 424 424 **www.vaio.sony-europe.com**

Sony's notebook features Intel's next-generation Centrino technology – Sonoma. Along with a 1.7GHz processor, 512MB of Ram and a 100GB hard disk, it comes with a decent software bundle.

### SONOMA NOTEBOOK

**Evesham Voyager C510**

**REVIEW** May 2005, p54 **RRP** £1,173.83
(£999 ex VAT) **PRODUCT INFORMATION**
Evesham 0870 160 9500 **www.evesham.com**

This is the fastest Sonoma notebook we've seen and it blazed through our benchmarks. If you want a portable PC that lets you play the latest 3D games, this Evesham is well worth the money.

### TABLET PC

**AJP T200C**

**REVIEW** August 2004, p48 **RRP** £1,173.82
(£999 ex VAT) **PRODUCT INFORMATION**
AJP 020 8208 9700 **www.ajp.co.uk**

The T200C is a convertible notebook combining the features of a traditional laptop with the flexibility of a tablet PC. It includes a digital camera, DVD rewriter and costs just £999 ex VAT.

### PROJECTOR

**Infocus X2**

**REVIEW** September 2004, p51 **RRP** £799
(£680 ex VAT) **PRODUCT INFORMATION**
Infocus 08000 286 470 **www.infocus.com**

It might be a bit on the heavy side, but considering the price tag of just £799, the Infocus X2 impressed us a great deal. Colours were well represented and text was superbly crisp.

### 17IN LCD TV

**Dell W1700**

**REVIEW** January 2005, p70 **RRP** £451
(£383.83 ex VAT) **PRODUCT INFORMATION**
Dell 0870 152 4649 **www.dell.co.uk**

With a native resolution of 1,280 x 768, this 17in widescreen LCD TV is perfect for use as both a TV and a monitor. It features DVI, component, composite and S-video inputs and a remote control.

### 17IN FLAT-PANEL MONITOR

**Samsung Syncmaster 173P**

**REVIEW** November 2004, p117 **RRP** £389
(£331 ex VAT) **PRODUCT INFORMATION**
Samsung 01932 455 000 **www.samsung.co.uk**

If you're after a stylish flat-panel monitor that's capable of delivering stunning images, the Samsung Syncmaster 173P comes up with the goods. It's one of the more expensive 17in TFTs, but it's worth the extra money.

## PDA

### Palmone Zire 72

**REVIEW** September 2004, p106 **RRP** £199
(£170 ex VAT) **PRODUCT INFORMATION**
Palmone 0118 974 2700 www.palmone.com/uk

We weren't expecting much from the Zire 72, but were pleasantly surprised by its excellent picture quality, the 1.2megapixel camera and great performance.

## POCKET PC

### HP Ipaq rx3715

**REVIEW** November 2004, p67 **RRP** £328
(£279.15 ex VAT) **PRODUCT INFORMATION**
HP 0845 270 4222 www.hp.co.uk

The Ipaq rx3715 crams a wealth of features into its diminutive slimline case. Along with all the usual Pocket PC functions, you get a built-in camera, and both Bluetooth and Wifi capabilities.

## MULTIFUNCTION DEVICE

### Brother DCP-310CN

**REVIEW** February 2005, p54 **RRP** £119.99
(£102.12 ex VAT) **PRODUCT INFORMATION**
Brother 0870 830 4037 www.brother.co.uk

Although print quality isn't the best we've seen, the DCP-310CN is a good compact all-in-one unit, has the added benefit of being able to hook up to a network and comes at a decent price.

## MP3 PLAYER

### Apple Ipod

**REVIEW** January 2005, p129 **RRP** £207.99
(£176.17 ex VAT) **PRODUCT INFORMATION**
Apple 0800 039 1010 www.apple.com

Easy to use and undeniably stylish, the Ipod sets the standard which all other mp3 players follow. Available in a variety of storage options, the only factor that lets it down is battery life.

## LASER PRINTER

### HP Laserjet 1320nw

**REVIEW** January 2005, p66 **RRP** £368.95
(£314 ex VAT) **PRODUCT INFORMATION**
HP 0845 270 4222 www.hp.com

There are cheaper personal printers, but with excellent build quality, top performance and wireless support, the 1320nw impressed us a great deal. It comes with a duplex feature as standard.

## INKJET PRINTER

### HP Photosmart 8450

**REVIEW** April 2005, p68 **RRP** £249.99
(£212.76 ex VAT) **PRODUCT INFORMATION**
HP 08705 474 747 www.hp.com/uk

It's not the fastest printer available and requires a fair amount of space, but with a 2.5in LCD screen and integrated Bluetooth, this is able to produce great borderless prints.

## SPEAKERS

### Altec Lansing FX6021

**REVIEW** September 2004, p54 **RRP** £199.95
(£170.17 ex VAT) **PRODUCT INFORMATION**
Euro Tech 0870 460 6060 www.alteclansing.co.uk

If you don't have room for a full set of 5.1 speakers, this 2.1 set delivers surprisingly good results. Thanks to the six 1in micro drivers in the two satellites, sound is incredibly crisp.

## HIGH-END SPEAKERS

### Creative Gigaworks S750

**REVIEW** April 2004, p48 **RRP** £330
(£280.77 ex VAT) **PRODUCT INFORMATION**
Creative www.creative.com

Coming with a wireless remote control, 210w sub-woofer and seven satellites at 70w each, these THX-certified speakers from Creative can completely immerse you in sound.

## SOUNDCARD

### Creative Audigy 2 Platinum EX

**REVIEW** May 2003, p76 **RRP** £89.90
(£76.51 ex VAT) **PRODUCT INFORMATION**
Creative http://europe.creative.com

This feature-filled card and external unit provides 24/96 recording, 6.1 sound and loads of software, including Cubasis VST 4.0 CE for music makers, and Ulead Videostudio SE DV for movie buffs.

## KEYBOARD AND MOUSE

### Microsoft Optical Comfort Edition

**REVIEW** April 2005, p74 **RRP** £79.99 (£68.07 ex VAT)
**PRODUCT INFORMATION** Microsoft 0870 601 0100
www.microsoft.com/uk

This wireless keyboard from Microsoft has a comfortable ergonomic design and comes with a quick-zoom control and an impressive wireless optical mouse.

## POWER SUPPLY

### Antec Phantom 350w

**REVIEW** March 2004, p74 **RRP** £117.44
(£99 ex VAT) **PRODUCT INFORMATION** Overclockers
www.overclockers.co.uk

The Phantom 350w's build quality is second to none. Constructed with aluminium heatsinks and not a single fan in sight, this 350w power supply would be ideal for a home theatre PC.

## GRAPHICS CARD

### HIS Excalibur X800 XT IceQ II

**REVIEW** October 2004, p77 **RRP** £365
(£310 ex VAT) **PRODUCT INFORMATION**
Ebuyer 0870 467 0753 www.ebuyer.com

If you're addicted to speed, this device from HIS is the fastest graphics card we've seen in terms of real-world performance. Featuring ATI's Radeon 420 core, it's a real scorcher.



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## DIGITAL VIDEO CAMERA

### Sony Handycam DCR-HC1000E

**REVIEW** November 2004, p68 **RRP** £1,300
(£1,106.38 ex VAT) **PRODUCT INFORMATION**
Sony 08705 111999 www.sony.co.uk

If your budget can stretch to £1,300, this is a great camcorder. Not only are its three CCD sensors capable of capturing stunning footage, but it's also very easy to use. Expensive, but well worth the money.

## DIGITAL CAMERA

### Canon Powershot A85

**REVIEW** December 2004, p64 **RRP** £239
(£203.40 ex VAT) **PRODUCT INFORMATION**
Canon 0870 514 3723 www.canon.co.uk

Not only can the Powershot A85 take decent 4megapixel images, but it also comes with a wealth of manual controls, as well as a 3x optical zoom and a 32MB Compact Flash card to get you started.

## HIGH-END DIGITAL CAMERA

### Canon Powershot Pro1

**REVIEW** July 2004, p62 **RRP** £799
(£680 ex VAT) **PRODUCT INFORMATION**
Canon 08705 143 723 www.canon.co.uk

This well-designed 8megapixel prosumer digital camera is loaded with features, including a 7x optical zoom and remote control. It also takes stunning photos.

## DVD-RW

### NEC ND-2510A

**REVIEW** November 2004, p75 **RRP** £49.93
(£41.91 ex VAT) **PRODUCT INFORMATION**
NEC 020 8752 3665 www.nec.co.uk

The NEC ND-2510A doesn't come with any bundled software or free discs, but this 8.5GB dual-layer DVD is great value for money. At under £50, it's a real steal.

## MEDIA CREATION SOFTWARE

### Roxio Creator 7

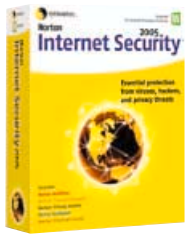
**REVIEW** June 2004, p73 **RRP** £69.99
(£59.57 ex VAT) **PRODUCT INFORMATION**
Roxio www.roxio.co.uk

With the ability to edit photos, create home movies and burn CDs, Roxio Creator 7 houses a wealth of features and is very easy to use. What's more, it comes at a very competitive price.

## PC SECURITY SOFTWARE

### Norton Internet Security 2005

**REVIEW** February 2005, p80 **RRP** £54.99
(£46.80 ex VAT) **PRODUCT INFORMATION**
Symantec 01628 592 222 www.symantec.co.uk




Providing protection from viruses, hackers and other privacy threats, as well as parental controls and anti-spam features, this is one of the best products to ensure your PC is both safe and secure.

## OFFICE SOFTWARE

### Microsoft Office Professional 2003

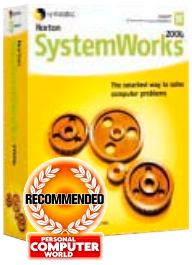
**REVIEW** May 2004, p150 **RRP** £459 (£390.64 ex VAT)
**PRODUCT INFORMATION** Microsoft 0870 501 0100
www.microsoft.com

This office suite offers a host of features, including a revamped version of Outlook. There are cheaper options available, but Microsoft's Office 2003 is the clear market leader.

## PC MAINTENANCE SOFTWARE

### Norton Systemworks 2004

**REVIEW** March 2004, p68 **RRP** £64.99
(£55.31 ex VAT) **PRODUCT INFORMATION**
Symantec 01628 592 222 www.symantec.co.uk




If you want to keep your PC healthy and safe from harm, Norton Systemworks 2004 certainly gets the job done, and at the reasonable price of a penny short of £65 to boot.

## ECOMMERCE SOFTWARE

### Actinic Business 7

**REVIEW** July 2004, p81 **RRP** £938.83
(£799 ex VAT) **PRODUCT INFORMATION**
Actinic 0845 129 4800 www.actinic.co.uk

If you're looking to set up an ecommerce site, Actinic Business is definitely worth a look. With a wide range of advanced features and an easy-to-understand interface, its high price tag is justified.

## IMAGE-EDITING SOFTWARE

### Adobe Photoshop Elements 3

**REVIEW** January 2005, p83 **RRP** £69.33
(£59 ex VAT) **PRODUCT INFORMATION**
Adobe 020 8606 4001 www.adobe.co.uk

If you can't afford the full version of Photoshop, Elements 3 is a good alternative. Building on the huge success of Elements 2, it's loaded with features and is great value for money.

## VIDEO-EDITING SOFTWARE

### Adobe Premiere Elements

**REVIEW** January 2005, p148 **RRP** £69.33
(£59.00 ex VAT) **PRODUCT INFORMATION**
Adobe 020 8606 4001 www.adobe.co.uk

Based on Adobe Premiere, the industry standard video-editing package, Premiere Elements is perfect for home users who want to edit their videos quickly and effectively without spending a fortune.

## MUSIC CREATION SOFTWARE

### Steinberg Cubasis VST 5

**REVIEW** March 2004, p67 **PRICE** £59.95
(£51.02 ex VAT) **PRODUCT INFORMATION**
Pinnacle Systems www.pinnaclesys.com

This sound-editing tool takes a bit of getting used to, but with a huge range of plug-in effects and a decent collection of virtual instruments, you'd be hard pushed to find a better package at this price.

SONY

# Be there when it counts.

Even if you can't always be there, you can still feel part of what's going on with the **Sony SNC-M Series**. It's a range of compact all-in-one network cameras with built-in microphones, web servers and network interfaces. Just one camera can bring video and audio monitoring straight to your PC – at home or in the office. Simple to use, with wide area viewing, it can be installed virtually anywhere. Its MPEG-4 compression format also provides smooth video and audio streaming over any network, including those with limited bandwidth. Now everyone can put themselves firmly in the picture with the **Sony SNC-M Series**. So why don't you?

To find out more, telephone 0870 60 60 456 or email sukbusinessinformationcentre@eu.sony.com

## Sony Personal Network Cameras, keeping you in touch wherever you are.

Sony is a registered trademark of Sony Corporation, Japan.

www.sonybiz.net/networkvideo

New SNC-M Series

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RELISYS

## Relisys TFT/ LCD Monitors

| | ex vat | inc vat |
|---|---|---|
| Relisys lcd mn/tv 17" widescreen rl1720s | 239 | 280.82 |
| Relisys lcd montitor 17" m.media tl766 | 130 | 158.62 |
| Relisys lcd monitor 19" m.media tl966a | 173 | 203.27 |
| Relisys lcd monitor 19" m.media tl966a-blk | 173 | 203.27 |
| Relisys lcd monitor 19" black dvi tl966b | 218.99 | 257.31 |
| Relisys lcd montor 19" ret tl995a | 189 | 222.07 |
| Relisys lcd monitor/ tv 20" rlt2000 | 280 | 340.75 |
| Relisys lcd monitor/ tv 30" rlt3000 | 830 | 1010.5 |

**OFFER OF THE MONTH!**

## AMD Sempron retail + heatsink & fan

| | ex vat | inc vat |
|---|---|---|
| 2400 1.66hz socket a 256kb 333mhx | 37 | 43,47 |
| 2500 1.7hz socket a 256kb 333mhx | 42 | 49.35 |
| 2600 1.8hz socket a 256kb 333mhx | 47 | 55.22 |
| 2800 2.0hz socket a 256kb 333mhx | 54 | 63.45 |
| 3100 1.8hz socket 754 1600mhx | 67.5 | 79.31 |

## AMD athlon 64 retail + heatsink & fan

| | ex vat | inc vat |
|---|---|---|
| Athlon 64 3000+ socket 754 | 81 | 95.17 |
| Athlon 64 3200+ socket 754 | 107.4 | 126.19 |
| Athlon 64 3400+ socket 754 | 125 | 146.88 |
| Athlon 64 3500+ socket 939 | 149.5 | 175.66 |
| Athlon 64 3700+ socket 754 | 185 | 217.37 |
| Athlon 64 3800+ socket 754 | 239 | 280.82 |
| Athlon 64 4000+ socket 939 | 359.99 | 422.99 |

## Intel Celeron D retail with heatsink and fan

| | ex vat | inc vat |
|---|---|---|
| Celeron processor 320 2.4ghz 533mhz 256k | 39.55 | 46.47 |
| Celeron processor 330 2.6ghz 533mhz 256k | 47.8 | 56.16 |
| Celeron processor 335 2.8ghz 533mhz 256k | 56.6 | 66.5 |

## Intel p4 retail with heatsink and fan

| | | |
|---|---|---|
| Pentium 4 2.8ghz 478 1m cache 800mhz | 94.99 | 111.61 |
| Pentium 4 2.8ghz 478 512kb cache 800mhz | 97.95 | 115.09 |
| Pentium 4 3.0ghz 478 1m cache 800mhz | 98.79 | 116.08 |
| Pentium 4 3.0ghz 775 1m cache 800mhz | 101.5 | 119.26 |
| Pentium 4 3.2ghz 478 1m cache 800mhz | 118 | 138.65 |
| Pentium 4 3.4ghz 775 1m cache 800mhz | 155.5 | 182.71 |
| Pentium 4 3.4ghz 478 2m 800mhz extream edtion | 559.99 | 657.99 |

## Maxtor Hard Drives oem

| | ex vat | inc vat |
|---|---|---|
| Diamondmax plus 40g 2m cache 7200rpm | 24.5 | 28.79 |
| Diamondmax plus9 80g 2m cache 7200rpm | 29 | 34.07 |
| Diamondmax plus9120g 2m cache 7200rpm | 39 | 45.82 |
| Diamondmax plus9120g 8m cache 7200rpm | 40.7 | 47.82 |
| Diamondmax plus9160g 8m cache 7200rpm | 45.47 | 53.43 |
| Diamondmax 160g 8m cache sata | 49.99 | 58.74 |
| Diamondmax 10 200g 8m cache sata | 59.5 | 69.91 |
| Diamondmax 200g 8m cache sata | 63 | 74.02 |
| Maxline 250g 8m cache sata | 91.25 | 107.22 |
| Diamondmax 10 300g 16m cache sata | 111 | 130.42 |

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acer ACER 15" Monitor

£104.99

## Asrock Motherboards AMD

| | ex vat | inc vat |
|---|---|---|
| Asrock k8/sempron sis 760gx/ 5.1snd / lan / 3d gfx vga /hb/sata/raid | 41.5 | 48.76 |
| Asrock skt939 upgrade board for athlon 64/64fx use with k8upgrade | 17.5 | 20.56 |
| Asrock k7-s41gx s/v/l m-atx 333fsb | 23.99 | 28.19 |
| Asrock k7-s41 s/v/l m-atx 400fsb | 25.99 | 30.54 |
| Asrock k7 vt6 kt600 / 4x/ fsb400/ 5.1snd / lan 8xagp / raid sata/5pci | 25.99 | 30.54 |
| Asrock k7-vt4a+/kt400a/ 4x / fsb333/ snd / lan /ddr/ 8x agp | 20 | 23.5 |
| Asrock k7 via kt800 / fsb 400 / 5.1snd / lan /sata / raid /agp /hb | 30.39 | 35.71 |

## Asrock motherboards intel

| | | |
|---|---|---|
| Asrock p4vt8+ | 23.99 | 28.19 |
| Asrock p4i65gv p4 intel /ht /fsb800 / 6snd / ddr / lan / vag / agi 8x | 34.68 | 40.75 |
| Asrock 775i65gv p4 intel /fsb800 /6 snd / lan / hb /vga /sata /8x agp | 35.99 | 42.29 |
| Asrock p4i48 p4 intel848p+ich5 / ht /fsb 800 6snd / ddr / lan / agi 8x | 27 | 31.73 |

## Msi motherboards intel and amd

| | | |
|---|---|---|
| Msi 915p combo-fr intel | 67.99 | 79.89 |
| Msi pt8 neo-v intel | 29.35 | 34.49 |
| Msi k8t neo-fsr amd | 51.99 | 61.09 |
| Msi k8t neo-fis2r amd | 64.54 | 75.83 |
| Msi k8n neo platinum | 66.48 | 78.11 |
| Msi k8n neo-fsr amd | 59.99 | 70.49 |

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**WORDS:** ARTUR HOFFMANN & HEIKO MERGARD

# Every tool you will ever need

**Hundreds of utilities and Windows add-ons are buried in web archives and on CDs, so to make your lives easier we've dug out the best of them**

Most of us don't pay attention to the useful utilities which lie in Microsoft's hidden archives. As many of the tools were developed for Microsoft's internal use, there's no support for them so to a large extent they've remained 'secret'.

For example, on the Windows XP Service Pack 2 CD there is an undocumented file called msicuu.exe. Security-conscious users would never double-click on this file unknowingly, so would miss out on the Installer Cleanup Utility, which tidies up the file remnants that can be left on the hard disk and in the Registry by failed installations.

There are lots of useful helper programs for everyday Windows use, but it's not easy to sort out the real pearls from this assortment of poorly or totally undocumented tools, utilities and add-ons.

*PCW* has trawled through Microsoft's archives and fished out the most interesting downloads for Windows XP. We've discovered 110 tools and add-ons worth recommending and for ease of reference we've split them into four categories in the tables on page 96: Windows tools, Windows add-ons, Multimedia/Office add-ons and Communication. Turn the page to find out more.



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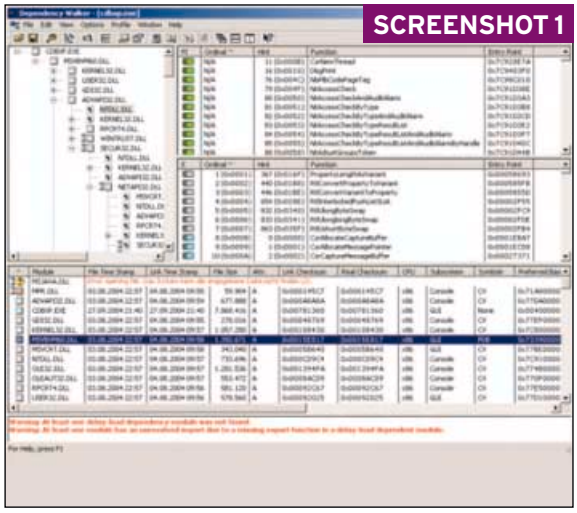


**Maintain a precise overview of system processes with Dependency Walker, which displays the dependencies between exe, dll and ocx files (see table below)**

## Where to find downloads

If you're going to search Microsoft's website for useful downloads, you'll need plenty of time. Instead of making all the important utilities available in one place, Microsoft puts things such as the Baseline Security Analyzer 1.2.1, Tweakomatic 1 and the XP SP2 Support Tools in fixed categories. Go to the English language Download Center (**www.microsoft.com/downloads/search.aspx?displaylang=en**) and choose a category such as Internet, System Management Tools or Development Resources and you'll see the top 50 downoads for each. If the utility you're looking for isn't listed there and you know its name, use the Search function. There are further download areas on the Microsoft Developer Network (MSDN), Technet, Office and Windows Media sites (see the further info box on page 94).

If you've bought the CD or DVD edition of *PCW*, there are spreadsheets in the Resources section with live links to downloads of the utilities or go to **www.pcw.co.uk/labs**.

Service Pack 2 (SP2) puts a lot of emphasis on automatic system updating. As soon as new patches, hotfixes or security updates are available, the Windows Update component of the Security Center lets you know. This is supposed to prevent poorly secured computers being misused to spread viruses and worms. Other XP components, such as the Media Player, Scripting Host and the legendary Power Toys, are also automatically updated. However, for items which don't auto-update, you'll have to track down and install the latest versions yourself.

If you use your PC for video editing or DVD authoring you will have to download and install the latest version of DirectX. Almost as important is the .Net Framework, a programming environment conceived by Microsoft and used by more and more programs, including some of those featured here. You have to download the .Net Framework 1.1 with Service Pack 1 from Microsoft.

You also need tools to make boot discs for Windows XP Home or Professional with SP2, which you can only get from the Microsoft website. If your system won't start you can use the boot discs to regain access to your data to save it or fix the cause of the crash.

## Find Windows security loopholes

Microsoft's Baseline Security Analyzer 1.2.1 (MBSA 1.2.1) is very easy to use and is essential for any XP system. You use it to check the operating system and, if installed, any Microsoft Office components (2000 or later) for security holes and missing updates (see screenshot 2). On the Welcome screen, select whether MBSA 1.2.1 should check one or more computers. When selecting which items to check, we'd advise you to select all available options. Then start the scan with a click on Start Check. Problems MBSA 1.2.1 regards as critical are marked with a red x. Clicking on the 'How to correct this' link opens the appropriate help page. For example, the GDI+ recognition module checks to see whether the computer has any components which might be affected by the jpeg processing buffer overrun security loophole, described in Security Bulletin MS04-028 (**www.microsoft.com/technet/security/bulletin/ms04-028.mspx**) and lets you know whether a GDI+ security update is required.

## Free protection for server services

Potential security risks arise where you have installed Internet Information Services (IIS) 4, 5 and 5.1-based server services, mainly because, by default, services which can be abused by hackers are active. To permanently close these holes – such as the FTP, NNTP and SMTP services – Microsoft has made the IIS Lockdown Tool 2.1 available.

It's also advisable to use URL Scan 2.5. This command-line-driven security tool allows you to define rules which filter HTTP requests arriving at the server and deny potentially dangerous requests before they are processed and can do any damage. If a server, such as Windows Server 2003, is already using IIS 6, it's possible (but not advisable) to use URL Scan 2.5, but IIS 6's own security mechanisms are much better. You can read a direct comparison of the individual functions in the Technet

**TABLE 1: Top 10 SP2 support tools**

| PROGRAM NAME | DESCRIPTION | FILE NAME |
|---|---|---|
| API Monitor | Useful when tracking down the causes of program crashes; shows users precisely which DLLs and APIs are used by an exe file | apimon.exe |
| Dependency Walker | Displays file dependencies of various file types including exe, dll and ocx, in a clear tree diagram; a big help when tracking down missing system files (see screenshot 1) | depends.exe |
| Win Installer Cleanup Utility | Removes leftover files and Registry entries from failed software installations | msicuu.exe |
| Win Diff | Compares selected files or the contents of whole directories and displays the results in a list | windiff.exe |
| Directory Disk Usage | Sheds light on the exact size of selected directories and sub-directories | diruse.exe |
| Dup Finder | Simple tool to search through entire directories looking for duplicate files | dupfinder.exe |
| File Version | Shows exact version info for any executable or dll file | filever.exe |
| Disk Probe Editor | Manipulates data directly on the hard disk, for example to restore a damaged Master Boot Record or a corrupt partition table | dskprobe.exe |
| Network Connectivity Tester | Checks the capabilities of a PC's network adapter. The command netdiag.exe // saves the results in a file named netdiag.log | netdiag.exe |
| Active Directory Replication Monitor | Important for system administrators, displays the Active Directory Replication status, forces synchronisation between domain controllers and monitors their performance | replmon.exe |

NOTE: These support tools can all be found on the Windows XP installation CD, in the /Support/Tools directory. Run the suptools.msi file to install these programs.


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### GA-K8NXP-9 NVIDIA nForce4 Ultra Chipset

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- GIGABYTE unique Dual Power System (DPS) design
- Supports New Generation PCI-ExpressX16 Graphics interface
- Supports NVIDIA SATA II and RAID for advanced storage application
- Dual Gigabit LAN solution with 54Mbps Wireless LAN solution
- Enhances network security by NVIDIA ActiveArmor™ powered Firewall
- Integrated T.I. IEEE 1394b FireWire interface

SATA II | IEEE 1394b | Dual LAN | USB 2.0 | DualBIOS™ | EasyTune™ 4 | 8-Channel Audio with UAJ

### GA-K8NXP-SLI NVIDIA nForce4 SLI

- AMD Athlon™64FX/ Athlon™64 socket 939 platform
- AMD GIGABYTE unique Dual Power System (DPS) design
- AMD NVIDIA SLI Multi-GPU Support for extreme graphics performance
- AMD Supports NVIDIA SATA II and RAID for advanced storage application
- AMD Dual Gigabit LAN solution with 54Mbps Wireless LAN solution
- AMD Enhances network security with NVIDIA ActiveArmor™ powered Firewall
- Integrated T.I. IEEE 1394b FireWire interface

SATA II | IEEE 1394b | Dual LAN | USB 2.0 | DualBIOS™ | EasyTune™ 4 | 8-Channel Audio with UAJ

### GA-K8VT890-9 K8T890 +8237 Chipset

- Socket 939 supports AMD Athlon™64 FX/ 64 processor
- Supports new generation PCI ExpressX16 graphics interface
- Supports Dual Channel DDR400 memory architecture
- Integrated Gigabit LAN Ethernet controller
- Integrated Serial-ATA interface with RAID 0,1 function
- Integrated high quality 8 channel Audio Codec

Gigabit LAN | USB 2.0 | 8Ch Audio with UAJ | EasyTune™ 4

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http://www.a2zcomputers.co.uk/
http://www.ambros.co.uk/
http://www.aria.co.uk/
http://www.aslweb.co.uk/
http://www.ballicom.co.uk/
http://www.computerorbit.co.uk/
www.ctech2000.co.uk
http://www.cubsuk.com/
http://www.dabs.com/
http://www.eclipse-computers.com/
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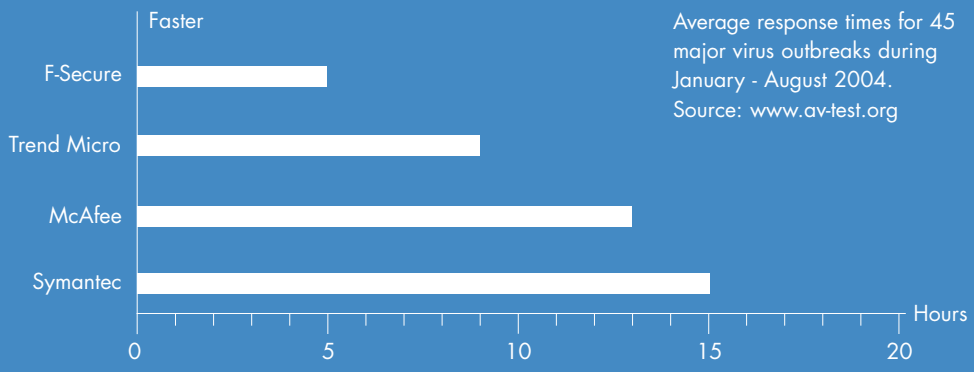


Average response times for 45 major virus outbreaks during January - August 2004.
Source: www.av-test.org

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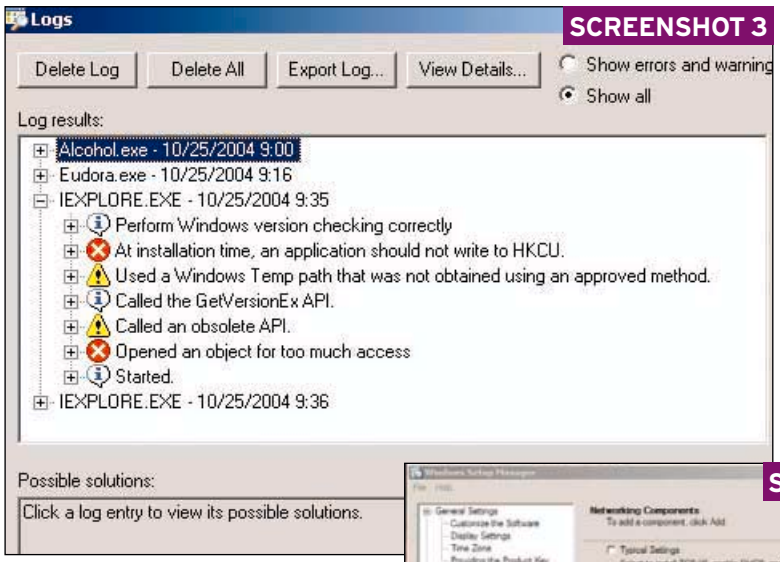
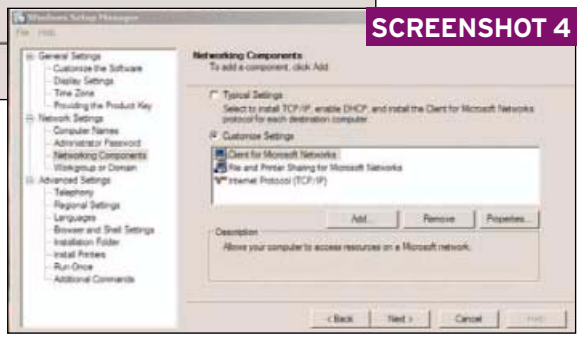



SCREENSHOT 3



SCREENSHOT 4

Seven of the tools, including ipseccmd.exe, extract.exe and netdom.exe, were specially updated for use with SP2. The individual tools can be awkward to use as the majority of them can only be run from the command line. Details of the syntax to use with each tool can easily be obtained by entering the tool's file name, for example, netset.exe, followed by a space and the parameter /? and pressing the Return key.

In addition, 42 of these utilities are integrated with the Help and Support Center. This can be called from Start/All Programs/Windows Support Tools/Support Tools Help. This describes the uses, effects and syntax for the relevant tools. You can find out whether the selected tool works exclusively from the command line or whether it has a graphical user interface. The help file can also be extracted from the support.cab file on the XP CD – the filename is suptools.chm, which is a Windows Help file format.

## Install XP automatically

If you want to install Windows XP automatically without user intervention or want to clone an existing installation on another PC, you may be interested in the Microsoft deployment tools. This collection of four tools is stored on the XP SP2 installation CD in the deploy.cab file SupportXTools folder .

Sysprep is a big help for administrators if Windows XP has to be installed on multiple PCs. After setting up and configuring the master PC, run the file sysprep.exe. It checks the XP installation, prepares the computer for duplication and shuts it down. The hard disk from this computer – the master hard disk – can then be removed, cloned as many times as needed and installed in the target computers.

When one of these target computers is started for the first time, Sysprep allocates it a unique security ID (SID). Next, Sysprep configures the operating system so that the Windows Welcome page is displayed next time the machine is started. This shortened form of setup only takes five or six minutes compared to the normal 45 to 60. The user simply has to supply user-specific information such as agreement with the end-user licence and the product key, user and company name.

The Installation Manager tool helps you to create answer files (see screenshot 4). Windows setup uses these files to carry out unattended installations or updates. Answer files contain, as their name implies, answers the questions Windows Setup asks the user during installation, such as the computer name. Only after you've supplied this name will Windows setup continue. However, if this computer name is defined in the answer file, Setup won't prompt you to enter it. Starting the tool setupmgr.exe launches a wizard mode. Choose Unattended Installation, choose the operating system to install and specify Fully Automatic as the option for user intervention. After this, enter the details the program asks for, such as the Display Settings and Computer Name and Browser and Shell settings.

**Top: Know what's running: Application Verifier 2.50 shows which APIs a program calls**

**Bottom: The Installation Manager assists in the creation of answer files which are required for fully automated XP installation**

## Optimise Windows XP for free

Many system tuning tools are free: as well as Tweakomatic (see page 98) it's a good idea to use the well-known and reliable Tweak UI utility. You can specify, among other things, the number of items to display in the Alt-Tab window, which options are offered when a removable disk is inserted and which Control Panel applets should be deactivated. Tweak UI 2.10.0.0 works under Windows XP SP1, SP2 and Server 2003. Power Toys for Windows XP also improves usability: the Alt-Tab Replacement replaces the usual Alt-Tab window with an expanded version, showing not only the icons for running applications but also a thumbnail preview of the relevant program window.

This is very useful if you have more then one instance of a program running. Newly incorporated in Power Toys is the Cleartype Tuner, which improves the readability of fonts on LCDs. Image Resizer adds a new command to the right-click context menu for rapid image resizing. You can use the CD Slideshow Generator and the HTML Slideshow Wizard to play Photo-CDs as a slideshow on the monitor and to create HTML slideshows of images on your hard disk.

Further useful downloads from Microsoft offers include an expanded calculator (Calculator Plus), a System tray world clock (Time Zone) and a reader for handwritten files created on a Tablet PC (Windows Journal Viewer 1.5).

Find out more about Power Toys on page 100 where there's a rundown of tools that can enhance your multimedia, Office and communication experience.

## Further information

- **Microsoft Office Online http://office.microsoft.com: This is the download portal for Office component add-ins and templates.**
- **WM Plug-ins www.wmplugins.com: Get free and paid-for skins, plug-ins and visualisations for the Windows Media Player family.**
- **Microsoft Download Center: www.microsoft.com/downloads**
- **MSDN Download Center http://msdn.microsoft.com/downloads: This has SDKs and programming tools for developers.**
- **Technet Downloads www.microsoft.com/technet/downloads/default.mspx: For experienced users and system administrators.**

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## TABLE 2 – 25 Windows utilities

| PROGRAM NAME | FUNCTION |
|---|---|
| .Net Framework 1.1 | Microsoft programming environment, required by more and more applications |
| Application Compatibility Guide XP SP2 | Helps administrators to find out which applications won't run under XP SP2 |
| Autoplay Repair Wizard | Finds and repairs non-working Autoplay settings |
| Boot diskettes for Windows XP Professional SP2 | Needed to create bootable XP diskettes |
| Diagnostic program for MSJVM 1.0a | Checks whether the Microsoft Java Virtual Machine is installed |
| GDI+ checker | Checks whether any installed programs require a GDI+ security update |
| Group policy management console | Management console for network management of group policies |
| IIS Lockdowntool 2.1 | Deactivates potentially dangerous IIS service settings |
| MBSA 1.2.1 | Scans the system and reports all potential security loopholes |
| Performance Monitor Wizard | Benchmarking tool which monitors and logs PC performance |
| Port Query 2 | Helps in tracking down the sources of TCP/IP connection errors |
| Port Query UI | Graphical interface for the Port Query 2 utility |
| Port Reporter | Monitors and logs activity via TCP and UDP ports |
| PR Parser | Viewer for use with Port Reporter log files |
| Product Support's Reporting Tools | Collection of nine tools for error finding |
| Qfecheck 1 | Checks an XP system to see whether all important hotfixes are installed |
| Scan-Tool KB824146 Scan | Checks your network for computers on which two important patches are missing |
| Sectorinspector 5.2 | Command-line tool to read hard disk sectors |
| Tweakomatic 1 | Script-based utility with which you can change hundreds of Windows settings |
| TweakUI 2.10.0.0 | Easy-to-use utility to alter numerous Windows settings |
| URL Scan 2.5 | Filters incoming HTTP requests before they are processed by the web server |
| Windows Application Compatibility Toolkit 3 | Collection of three utilities for testing applications under Windows XP SP2 |
| Windows Server 2003 Resource Kit Tools | 126 diagnostic tools to help administrators to track down faults |
| Windows XP Service Pack 2 rollout tools | Utility collection to help with migration to and unattended installation of XP |
| Windows XP SP2 Support Tools | Collection of 81 diagnostic utilities, some of which are command-line-based |

## TABLE 3 – 25 Windows extensions

| PROGRAM | FUNCTION |
|---|---|
| Alt-Tab Replacement | Replaces the Alt-Tab window with a more versatile version |
| Calculator Plus | Expanded calculator which can also convert units |
| CD Slide Show Generator | Generates self-running slideshows from selected image files |
| Clear Type Tuner | Improves the appearance of text on TFT monitors |
| Client for Windows Rights Management 1 | Needed to run applications which use Windows rights management |
| Creativity Fun Pack Power Toys | Adds a video screensaver and wallpaper changer to XP |
| DirectX 9.0c | Required by many games and multimedia software applications |
| High Mat Support | Adds High MAT support to the XP burning function |
| HTML Slide Show Wizard | Simple tool for creating web slideshows |
| Image Resizer | Windows Explorer Add-in for rapid image resizing |
| Java 2 Conversion Wizard | Converts Java code into Visual C+ |
| Open Command Window Here | Places a command in the context menu for opening a command window |
| Plus Fotostory 2 LE | Tool for designing multimedia slideshows in wmv format |
| Power Calculator | Scientific calculator which can display functions graphically |
| Power Toys for Windows XP | Collection of 11 useful utilities |
| Shadow Copy Client | Allows access under XP to shadow copies stored on other Windows servers |
| Taskbar Magnifier | Places a screen magnifier with a zoom of up to 8x in the taskbar |
| Time Zone | System Tray utility for displaying clock time in several time zones at once |
| Video Decoder Checkup Utility | Checks which video codecs are installed on your PC |
| Virtual Desktop Manager | Lets you work simultaneously with up to four Windows desktops |
| Webcam Timershot | Uses a webcam to take timed pictures |
| Windows Journal Viewer 1.5 | Makes it possible to read files created on a tablet PC |
| Windows Media Diagnostic Tool | Checks the installed codecs and writes the findings to a log file |
| Windows Script 5.6 | Current version of the Windows scripting tool |
| Winter Fun Screensavers | Two winter-themed screensavers |


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**TABLE 4 – 25 multimedia utilities**

| PROGRAM | FUNCTION |
|---|---|
| Codec Installation Package | Contains all required wma and wmv codecs |
| Decades Auto Playlist Pack | 14 automatic playlists for Windows Media Player 9 and 10 |
| Movie Maker 2 Creativity Fun Pack | A collection of animated titles, sounds and music clips for Movie Maker 2 |
| Movie Maker 2 Winter Fun Packs | Winter-themed collection of animated titles, sounds and music clips for Movie Maker 2 |
| Movie Maker 2.1 | Latest version of the XP video capturing and authoring tools |
| Plug-in for Adobe Premiere 6.5 | Adds wmv support to Adobe Premiere |
| Plus DancerLE | Five animated figures which dance on the desktop |
| Ratings Migration Power Toy | Saves and restores Windows Media Player 9 and 10 ratings |
| Skins for Windows Media Player | Web page with numerous Windows Media Player skins |
| Visualizations for Windows Media Player | Web page with numerous Windows Media Player visualisations |
| Windows Media ASF Viewer 9 | Diagnostic tool for analysing mp3, wma, wmv and asf files |
| Windows Media Bonus Pack | Collection of skins, visualisations and sound effects for Windows XP |
| Windows Media Capture 9 Series | Enables the capturing of avi files with surround sound |
| Windows Media Connect | Send music, photos and videos to hifi and TV |
| Windows Media Encoder 9 Series | Tool to convert audio and video files into wma or wmv format |
| Windows Media Mono to Multichannel Wave Combiner 9 Series | Makes it possible to combine several mono wav files in a single multichannel file |
| Windows Media Player 10 | Latest version of the Windows Media Player |
| Windows Media Player 10 SDK | Development kit for designing skins and visualisations |
| Windows Media Player 9 Creativity Fun Pack | Two visualisations and a Blogging Plug-in for Windows Media Player 9 and 10 |
| Windows Media Player 9 Tweak MP Power Toy Plug-in | User interface customisation tools for Windows Media Player 9 |
| Windows Media Player 9 Winter Fun Pack | Various Christmas-themed skins and visualisations |
| Windows Media Video 9 Video Compression Manager | Adds wmv support to applications |
| WM Plug ins | Microsoft page with plug-ins, skins and visualisations for Windows Media Player |
| Wma 9 Pro Channel Mask Mapping Tool | Command-line tool for analysing surround-sound files |
| Wma Lossless to Wave Converter | Converts wma 9 Lossless files to wav format |

**TABLE 5 – 25 office and web utilities**

| PROGRAM | FUNCTION |
|---|---|
| 3° | Peer-to-peer messaging service which streams audio and video files |
| Excel 2003-2002 Add-In MSN Money share prices | Load, manage and analyse share prices in Excel |
| Internet Explorer Administration Kit 6 | Lets you personalise Microsoft's browser |
| Lookout 1.2 | Tool for searching emails and attachments in Outlook |
| Microsoft Producer 2 | Supplementary program for producing precisely synchronised presentations |
| MSN Messenger 6.2 | Most up-to-date version of the messaging client |
| MSN Toolbar for Internet Explorer | Adds extra functionality to the Microsoft browser |
| Office 2003/XP add-in for removing hidden data | Removes hidden data from Office documents |
| Office Clipart and Media | Clipart and media collection |
| Office File Converter Pack | Collection of file converters for various formats |
| Office XP 2000 Addins Office Sounds | Collection of system sounds associated with particular actions |
| Office XP-Tool web components | Collection of controls to display tables, diagrams and databases on the web |
| Outlook 2003 Add-In: PST backup | Ensures PST files are backed up regularly |
| Powerpoint 2003 Add-In Office Animation Runtime | Displays Powerpoint animations in the browser |
| Powerpoint 2003 Viewer | Allows you to view files on computers without Powerpoint |
| Powerpoint template collection | Collection of 127 templates for Powerpoint 4 and above |
| Project 2003 Workgroup Message Handler | Handles connectivity between Project 2003 and the Workgroup Message Handler |
| Remote Desktop Connection Web Connection Software Download | Enables web-based remote desktop connections |
| Rights Management Add-On for Internet Explorer | Adds a Rights Management function to the browser |
| SMS Sender | Send SMS messages via a mobile attached to the PC |
| Visio Ifilter 2003-Add-in | Adds the ability to search Visio files to the XP search function |
| Visio Viewer 2003 | Allows you to view Visio files on computers where Visio is not installed |
| Windows Media Player 9 and 10 Add-in for Microsoft Frontpage | Adds audio and video features to the website-editing program |
| Windows Messenger 5 | Most up-to-date version of the Instant Messenger included with XP |
| Word 2003 XML Viewer | Displays XML documents created in Word as HTML files in Internet Explorer |



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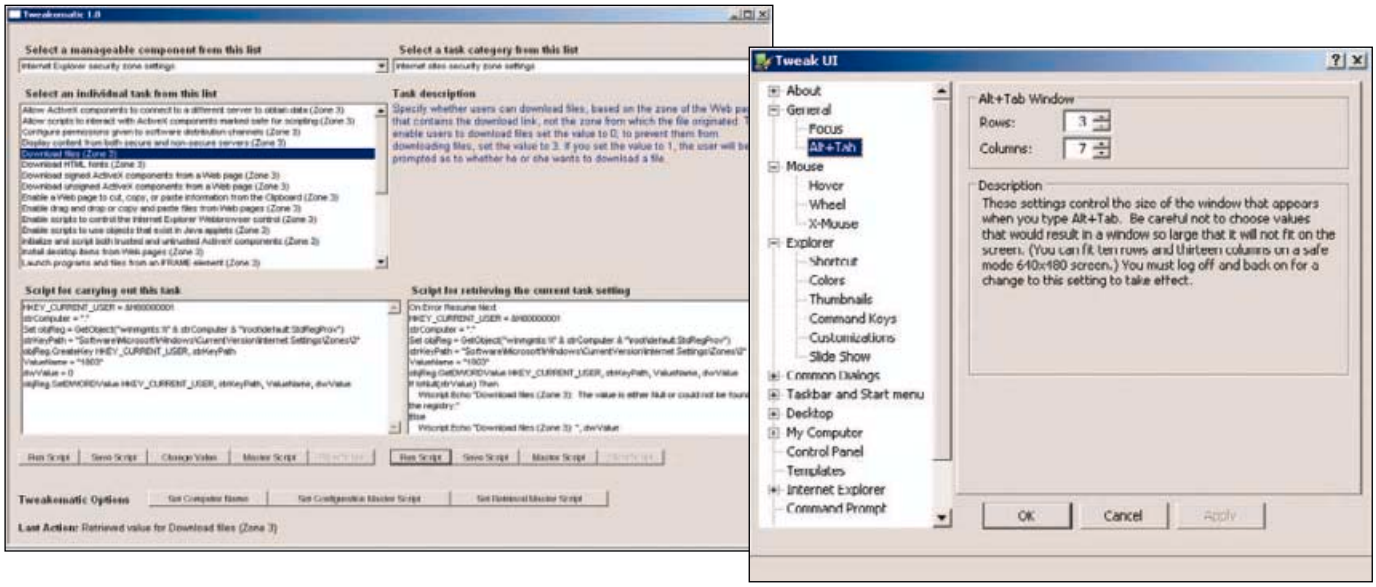
# Windows tuning using Tweakomatic




One of the most popular downloads from Microsoft is Power Toys for Windows, in particular the Tweak UI 2.10.0.0 component. This lets you easily adjust Windows XP's user interface to suit your needs, so it's very popular. Microsoft also provides a second, more advanced tweaking tool available for free – the script-based Tweakomatic 1.

## 251 Windows settings

Tweak UI 2.10.0.0 can be used to adjust your computer using preset options and parameters, but Tweakomatic 1 is better as it allows you to adjust 251 Windows settings with user-defined parameters and to write the changes to the Registry. The tool incorporates many other functions, and you can also execute the used-defined scripts on remote PCs.

## Instant tuning

Tweakomatic 1 writes all changes into the Registry immediately and without asking for confirmation, so you need to be careful. It's highly recommended that you make a backup of the Windows Registry database before using it. To do this, choose Run from the Start menu, type regedit and click on OK. In the Registry editor, choose Export from the File menu, choose All in the Export area and save the file with a memorable file name.

To start the program, double-click on the file tweakomatic.hta. Under 'Select a manageable component from this list', click on the arrow to open a dropdown menu. There are three entries in this list to show the areas where the tool can be used: Internet Explorer security zone settings, IE settings and Windows settings. If you have decided, for example, on Windows settings click on the arrow next to 'Select a task category from this list' and choose one of the eight categories, for example Windows Explorer settings. Tweakomatic lists the available Scripts in the box labelled 'Select an individual task from this list'. In this example there are 33 pre-written scripts to choose from. As soon as you select an entry, for example Disable the Desktop Cleanup Wizard, the program displays the relevant script for carrying out this task area and a brief description can be seen under Task description. Also displayed is the Script for retrieving the current task settings.

**Above left: Tweakomatic 1 allows user-defined changes to be made to 251 Windows settings buried in the Registry**

**Above right: Tweakomatic's little brother: Tweak UI is an aid to system tuning but can only alter local Registry settings**

## Running script templates locally

The tool is not very difficult to use. As described above, you decide on a function to use, in this case Disable the Desktop Cleanup Wizard. In the Script for retrieving the current task setting area, click on the Run Script button. A dialogue will show the current Registry setting. Click OK to close this message and have a look at the Task description, to see the possible parameters. In most cases these will be the logical operators 0 and 1 or Yes and No. In the example above, 0 turns the Desktop Cleanup Wizard on and 1 turns it off. Click on Change Value in the Script for carrying out this task area, enter the required value and click on Run Script.

The same principle holds for changing any Registry settings. All scripts can be saved locally as Visual Basic Script (vbs) files: to do this click on Save Script in the Script for carrying out this task area, enter a path and a file name, then click on OK.

## Scripts for remote computers

An advantage of this utility, and what makes it very useful for administrators, is that it can also be used to alter the Registry settings on remote PCs. The procedure differs from that for local computers only in that you have to specify the name of the remote computer.

To do this, click on Set Computer Name, type in the remote PC's network name and close the dialogue by clicking on OK. After this, the procedure is exactly as described in the previous section.

## Multi-tuning using a master script

If you want to carry out several Registry tweaks simultaneously – which is often the case – then the Master Script function is very useful. Instead of writing each alteration to an individual vbs file, this function makes it possible to put all the Registry commands together in one file.

To do this, click on Master Script, type a path and file name, such as mastertweak.vbs and close the dialogue by clicking on OK.

From now on, all the scripts saved by clicking on Save Script will be automatically incorporated in the Master Script, so you only require a single file when configuring remote computers.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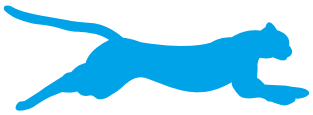
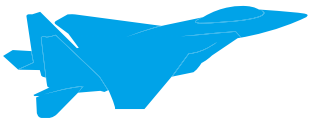


64mph

185mph



1875mph

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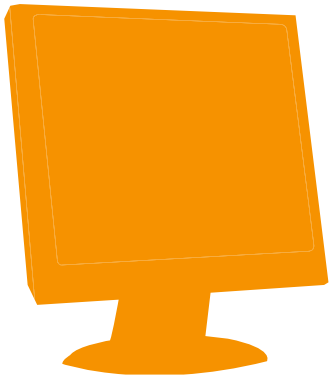

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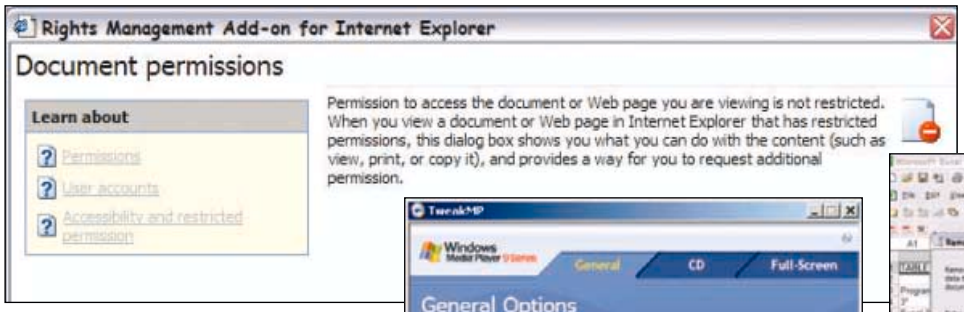
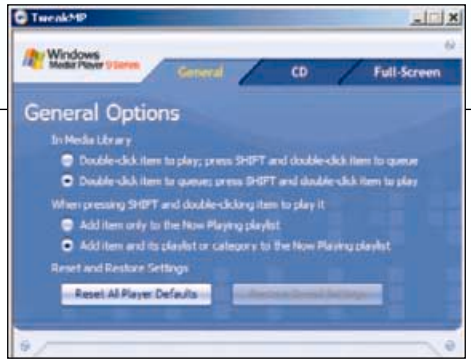
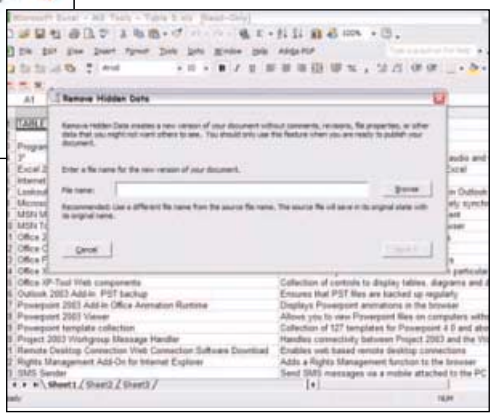



Above: An add-in enables Internet Explorer to use Rights Management. You can use this to protect your files from unauthorised distribution




Right: The Tweak MP Plug-in allows you to manipulate the Windows Media Player user interface

Below: Installing an add-in makes it easy for you to remove hidden data from Office documents



A large number of the free tools and add-ons that Microsoft offers are for Windows Media Player. The Codec Installation Package contains all wma and wmv variants from version 7 on. Ease of use is enhanced by the Tweak MP Power Toy, which is accessed in Media Player by choosing the Extras/Plug-ins menu. You can, for example, use Tweak MP to specify whether songs which you double-click in the Media Library are played straight away or added to the current playlist. The plug-in works with Windows Media Player 9 and 10.

The Ratings Migration Power Toy is important for Media Player 9 users who employ the ratings function and copy songs to another computer or migrate to the new version of the Media Player. It saves your ratings and restores them as required.

Another free tool lets you customise Media Player with extra skins and visualisations, go to **www.microsoft.com/windows/windowsmedia/mp10/getmore/vizsualizations.aspx** or **www.microsoft.com/windows/windowsmedia/mp10/getmore/skins.aspx**.

Windows Media Encoder 9 converts mp3 and wav files to the wma format. It's also possible to convert asf, avi and mpg videos to wmv format. To convert wma lossless to wav you can use the Windows Media Audio lossless to Wave Converter. Media Player 10 doesn't need this plug-in as it has native wav-to-mp3 conversion capabilities.

## Video presentations and slideshows

Like Windows Media Player, Windows Movie Maker 2 is a basic multimedia component supplied with Windows XP, and Microsoft also makes free goodies available for this program. Two Fun Packs include new sound effects, music, animated titles and transitions. The Creativity Fun Pack can add professional-looking intro and closing sequences to Movie Maker 2. These effects include a countdown, animated titles and more than 50 sound effects.

## Free Office extensions

The first stop for document templates, clipart and fonts is the Office Online website at **http://office.microsoft.com**, although there are useful Office tools scattered all over Microsoft's sites.

Viewers are available to let you view Office files on computers which do not have a Microsoft Office suite installed – for example, there are viewers for Powerpoint, Visio and Word.

Office XP and 2003 users who plan to distribute their files publicly should definitely get the add-in to remove hidden data. This lets you get rid of things such as editing comments, authoring details and deleted text and, as a handy side effect, file size is reduced too. After installing the add-in, the new function is available from the File menu.

Other free Office Add-ins allow Excel 2002/2003 to download share prices from the MSN Money site and integrate them into a table for analysis. There's also another add-in to increase the number of file converters available (Office File Converter Pack).

Microsoft Producer 2 is really an add-in for Powerpoint, but it has its own interface, so you don't have to start Powerpoint 2003 to use Producer 2. Its main use is to create high-quality, precisely synchronised multimedia presentations. These can include audio and video files, graphics and Powerpoint slides. In use, it's almost like video-editing software, as you place and rearrange all the Powerpoint objects on a horizontal timeline.

## Communication on all channels

Free tools for Internet Explorer aren't quite so numerous, being limited to two main components. The first is the MSN Toolbar for Internet Explorer 5.01, which adds a Pop-up-Blocker and an improved search facility and allows direct access to a Hotmail account.

The second is the Rights Management Add-on for Internet Explorer that enables you to view (but not alter) documents created with restricted permissions via Internet Explorer. To use this add-in you first need to install the Windows Rights Management Client.

There are a few more freebies available in the area of communications. Starting with ActiveX controls for Remote Desktop connection via Windows Messenger 5 and MSN Messenger 6.2, through to the text messaging tool SMS Sender – there's a free tool for almost every method of communication.

To obtain the tools listed in the tables, you can use the spreadsheet versions with live links that you'll find on this month's cover discs or on the *PCW* website at **www.pcw.co.uk/labs**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# The price is right

**WORDS:** WILL STAPLEY **TESTING:** VNU LABS **PHOTOS:** BRUCE MACKIE

**For those who don't want a very high-spec PC, £500 can buy one to suit your needs. And if you want to build your own budget system or investigate Internet deals, read on**

High-performance PCs with the latest components are great, but for most prospective buyers they're simply a waste of money. Unless you're mad about frame rates and raw processing power, what's the point in paying for something you don't need? If you're looking for a second computer for your home network or simply want a PC that's good for Internet, word processing and other non-demanding applications, you can now pick up a complete PC system, including a monitor, for less than £500.

Of course, buying a budget PC means you'll have to sacrifice those items that you usually see in our PC group tests. You won't be seeing any flashy 5.1 surround-sound speaker systems and you can forget about getting a top-notch processor or lightning-fast graphics card. Half the PCs in this month's group test come with integrated graphics. This means that all the graphical processing is carried out by the motherboard as opposed to a separate graphics card. The advantage of integrated graphics is the low price, but newer 3D games run slowly and a portion of the main system memory will have to be reserved solely for graphics.

We were surprised to find that *PCW* regulars such as Evesham and Mesh declined to enter this group test, even though they sell budget systems. However, we don't like to take no for an answer, so we've scoured a few of the big-name websites to see what sort of deals they're offering (see page 111).



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# Intellect Prodesk A64/2800S

Intellect kicks off this month's test with a system based around an Athlon 64 2800+, which is a sensible choice of processor at this price. We expect all new PCs to come with at least 512MB of Ram, and the Intellect doesn't disappoint with a single 512MB PC3200 module. If you fancy upgrading to 1GB a spare slot sits on the Gigabyte motherboard but, as you'll find out when we get to the graphics performance, we'd recommend upgrading elsewhere before ploughing in extra memory.

Before moving on to the other internal components, it's worth highlighting the Sharp LL-172AB TFT screen. This model, which features a 17in viewable display, will cost you around £200 on the street and Intellect has done extremely well to include it in a £500 system. Both horizontal and vertical viewing angles are impressive, and sitting it next to the other models this month makes it clear it's the best of the bunch by a long way.

Intellect's case houses a useful multiformat card reader. If you're into digital photography there's a good chance it will take your camera's memory card. The only notable omission is support for XD Picturecards, which are most commonly used by Olympus and Fujifilm cameras, but apart from that it accepts all major formats. You'll also find two USB ports and both audio-in and -out sockets on the front of the case.

The 80GB of storage offered by the Maxtor 7,200rpm drive isn't vast, but you can't expect much more when shopping around on a budget as tight as this, and for many people this amount of storage is ample. That said, more space will be needed if you're planning on storing a large collection of music, photo and video files, and a couple of entries this month did manage to squeeze in a 120GB drive. Should you need to archive files in order to create some room, NEC's impressive ND-3500 DVD burner is the solitary optical drive and will burn both single and dual-layer DVDs – the latter up to four-speed. Unlike some other DVD burners, the ND-3500 is relatively quiet writing discs.

Intellect relies on integrated graphics with the Prodesk A64/2800S. The Unichrome graphics chip grabs a 64MB share of the 512MB system memory and you can expect to play the majority of games as long as you stick to low detail levels, especially with the latest titles. There's a spare AGP port sitting on the motherboard, so if you want to upgrade to an Nvidia or ATI graphics card at a later stage the option is always there.

Like all the other PCs in this group test, Windows XP Home Edition is preinstalled. For a budget PC such as this, there's little point paying for XP Professional unless you intend to use it in a corporate environment or want the extra networking features it offers. Intellect has included PowerDVD and Nero Burning Rom 6, along with the freeware titles Open Office Suite and AVG Antivirus. Nothing spectacular, but they are all decent packages and software can get expensive. As you'll see, none of the entries come with any packages of high value.

A single year's on-site warranty is given as standard, which isn't as comprehensive as we would have liked – but this means Intellect will visit your home and attempt to fix any problems while you wait, which is far better than the return to base option offered by many. If you're willing to spend a little more, it's worth asking for a quote for an extra year's cover.

What makes this system worthy of the Editor's Choice award this month is its sheer value for money. The inclusion of a 17in Sharp TFT screen at this price is commendable, while the pairing of 512MB of Ram and an Athlon 64 2800+ processor serves as a great base for a budget PC. If you're storing heaps of video and mp3s, the 80GB will soon fill up, but most users will probably find the storage space will last a reasonable amount of time. The only area of concern that should be highlighted is the integrated graphics, but for a small price this can be upgraded. Overall, this is a highly impressive entry from Intellect and, bearing in mind the low price, it exceeded our expectations.

If you're after a competant PC that doesn't need to set the world alight with its processing power, or if you simply want a second PC, the Intellect Prodesk A64/2800S is worth the money and will serve you well.

## DETAILS

**RRP** £499 (£424.68 ex VAT)
**BEST PRICE & PRODUCT INFORMATION**
Intellect 08701 225 590
**www.intellect.uk.com**
**PROS** Impressive monitor; good processor
**CONS** Integrated graphics; 80GB hard drive
**VERDICT**
**Great value for money and good overall performance make this Intellect a good budget PC**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **PERFORMANCE** | ★★★☆☆ |
| **VALUE FOR MONEY** | ★★★★★ |
| **OVERALL** | ★★★★☆ |

# Jal Phoebe

Like Intellect, Jal has gone for an Athlon 64 2800+ processor and a single stick of 512MB PC3200 Ram. It's a solid pairing, especially for a budget system, and serves as a good base for the rest of the components.

Jal has opted not to rely on integrated graphics, and instead uses a Radeon 9550. This ATI graphics card is a cut-down version of the Radeon 9600 and has 128MB of dedicated Ram, so it won't be infringing on the 512MB of system memory. As you'll see from our performance graphs on page 109, the two PCs with Radeon 9550s outperform those with integrated graphics by a fair distance.

This isn't just useful for gaming, but also graphic-intensive tasks such as video editing and 3D modelling. It's worth bearing in mind that even though the Jal did well compared to the rest, its score of 1,555 in 3Dmark03 is still a long way behind those we're used to seeing from PCs with cards such as the Radeon X600 and Geforce 6800 that score around 5,000.

A decent 120GB hard drive is also supplied, which should be enough for most home users, although it's a shame Jal couldn't stretch to including a DVD writer. The BTC CD-RW features a built-in multiformat card reader, something that we have not seen before, while a second optical drive, from Sony, will read but not write DVDs. Upgrading to a DVD burner is something you'll need to consider if you want to back up lots of photo or video files, and we feel Jal should have gone for a single DVD burner and a separate card reader.

While all the other entries come with fairly standard wired keyboards and mice, Jal has found room for the wireless Optical Desktop from Logitech.

Along with XP Home, the software bundle consists of PowerDVD, the security package PC-Cillin and Nero Burning Rom – the latter becoming more useful once you upgrade to a DVD writer.

**DETAILS**

**RRP** £499 (£424.68 ex VAT)
**BEST PRICE & PRODUCT INFORMATION** Jal 08707 525 810 **www.jal.co.uk**
**PROS** Solid processor and memory; Radeon 9550
**CONS** Two optical drives, but no DVD writer
**VERDICT**
**Solid performance and good value for money, but despite having two optical drives it's unable to write DVDs**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

# Nethighstreet Net PCW499

Nethighstreet is one of two manufacturers to go with an AMD Sempron processor in this group test. Released last summer, the Sempron range is direct competition for Intel's Celeron processors. While they're not designed for high-performance computing, our benchmarks show that this 2GHz model was more than capable of producing decent results for a budget PC.

A total of 512MB of Ram is provided in the form of two 256MB sticks of PC3200 Ram. Like the Jal entry, the Net PCW499 features a Radeon 9550 graphics card – it's better than onboard graphics and will handle most games, but low detail settings will be the case for the very latest 3D titles.

Storage space isn't a problem thanks to the 120GB Maxtor hard drive, and the NEC ND-3500 dual-layer DVD burner makes another appearance.

A CRT monitor is shipped instead of a TFT. Although they take up much more space than TFTs and don't have the same 'eye appeal', CRTs are capable of producing better quality images and are often preferred by digital-imaging enthusiasts. This Samsung Syncmaster 793DF also features a flat screen, which eliminates the distortion seen on older CRTs. With a street price of around £90, it has allowed Nethighstreet to spend money elsewhere on the system.

Cyberlink PowerDVD and Nero Express both make good use of the NEC DVD burner, and a copy of Open Office is included. Don't get too excited about the inclusion of Open Office – it's good software, but as an open-source package it can be downloaded for free. Along with this, you also get a set of 2.1 Trust 2500P speakers, which are a good budget choice.

Overall, we feel the Net PCW499 has a decent balance of components and scoops a Highly Commended award, although the one-year return to base warranty is disappointing.

**DETAILS**

**RRP** £499 (£424.68 ex VAT)
**BEST PRICE & PRODUCT INFORMATION**
Nethighstreet 08700 271 339
**www.nethighstreet.com**
**PROS** Good processor; Radeon 9550 graphics
**CONS** Poor warranty
**VERDICT**
**Good balance of components, but the one-year return to base warranty could be improved upon**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |



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Computer Buyer Dec 2004 (D870P)

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- 393(W)x275(D)x37.5mm (H) / Weight: 3.8Kg
- Carry Case, 3 Year RTB Warranty***
- **Windows XP Home** with CD & Manual
- **PANDA** Platinum Internet Security -12 months
- **Virgin.net** - Internet access, NO 12mth contract

Other Features: Built in 3D Sound with virtual 6 channel output, 1x PC Card Slot, Smart Li-Ion Battery**, 3 Hot Keys (Email, Web Browser, Application), External USB FDD (Optional), Bluetooth module (Optional)*1

ECode: **e010**

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- 3 Year RTB Warranty***
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- **PANDA** Platinum Internet Security - 12 months
- **Virgin.net** - Internet access, NO 12mth contract

Other Features: Built in 3D sound and speakers, 1x PC Card Slot, Ambient Light sensor to control LCD light, Smart Li-Ion Battery** 5 application keys, (Optional) External USB FDD

ECode: **e034**

| 15.4" TFT | Centrino 1.7GHz | 512MB RAM | 80GB HDD 5400 rpm | DVD-RW/ CD-RW | PCI Express |
|---|---|---|---|---|---|

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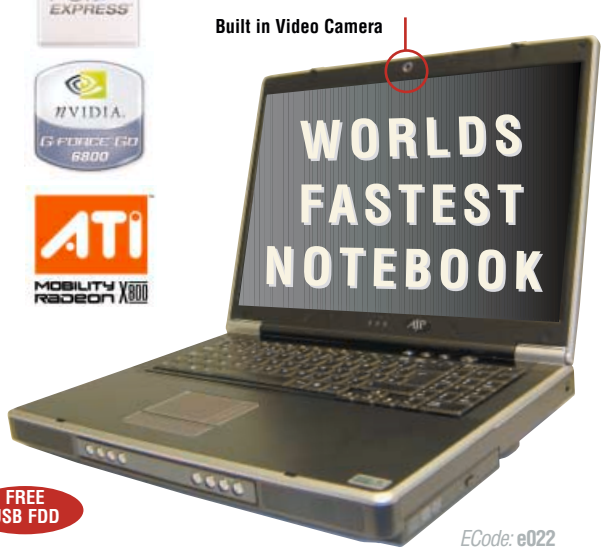


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ECode: e022

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## Medion Celeron D 330

Medion has included a 15in TFT with its Celeron D 330 budget PC. We don't see many of these in the Labs these days, and when you sit one next to a 17in model the 15in doesn't look great. The low 1,024 x 768 native resolution drastically reduces the amount of space on screen and a 17in CRT would have been a bulkier but more useful option, with its typical extra diagonal inch of viewable screen.

In an attempt to make this PC more attractive to the home-office market, Medion has included an HP PSC1215 all-in-one printer and scanner (go to **www.pcw.co.uk/products/hardware/1158400** for a full review). Although its print quality won't astound you, it's great value for money and Medion has done well to include it at this price.

The main area for concern with this Medion is its raw power. The Celeron processor struggled to keep pace with the others and is supplied with just 256MB of Ram. While 512MB isn't critical, we'd recommend an upgrade and, with the integrated memory grabbing 32MB, it leaves just 224MB spare. Run more than a few processes at once and you'll notice the drop in performance.

The preinstalled software includes titles such as Microsoft Works 8, Cyberlink Medion Home Cinema and a couple of Nero titles. While Works 8 can't match the versatility of Microsoft Office, it's perfect for a budget PC such as this.

If you're after a basic PC that's good for surfing the Internet, word processing and running very basic games, this Medion is worth considering. The HP all-in-one printer and scanner will serve the average home user well while a dual-layer DVD burner will come in useful. But the small screen, 256MB of Ram and slow processor will be enough to put off many.

This deal isn't available through Medion; instead, you can buy it through Woolworths' high-street stores and website.

**DETAILS**

**RRP** £499 (£424.68 ex VAT)
**BEST PRICE & PRODUCT INFORMATION**
Woolworths 0845 608 1100
**www.woolworths.co.uk**
**PROS** Impressive HP PSC1215 all-in-one
**CONS** 256MB Ram; slow processor
**VERDICT**
**It's good to see a package with an all-in-one printer, but performance is a big issue with this Medion**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **PERFORMANCE** | ★★☆☆☆ |
| **VALUE FOR MONEY** | ★★★☆☆ |
| **OVERALL** | ★★★☆☆ |

## Tiny Citizenship E10262

This rather peculiarly named PC is based on a Celeron processor, which is paired with 512MB of PC2700 Ram. Although the thought of a Celeron-based system might ring alarm bells and its performance resulted in a position near the bottom of the Sysmark 2004 graphs, the PC is adequate for non-processor intensive applications such as word processing, Internet access and image editing.

Just as with the Intellect and Nethighstreet machines, Tiny has steered clear of the integrated graphics route. The Nvidia Geforce FX 5200 isn't as powerful as the Radeon 9550 from ATI (not that the Radeon 5500 is a particularly speedy card), but it does manage to muster up far better 3D performance than those PCs with integrated graphics.

A total of 120GB of storage is offered by a single 7,200rpm Seagate hard drive, which should last you for quite some time, and a DVD writer is also available.

The display is an unbranded 17in TFT and not up to the standard of the Sharp model featured in Intellect's entry but, as long as you're not picky about your monitors, it will be fine for general home use.

Tiny hasn't gone overboard with the software bundle – along with Windows XP Home, you get a copy of Microsoft Works 7 but nothing else. The Tiny keyboard and mouse both leave a lot to be desired, and the generic set of 2.1 speakers will need to be replaced if you plan to use this PC as a media player.

In our benchmarks, the system produced average performance. The FX 5200 graphics card outshone the integrated versions but couldn't keep up with the Radeon 9550 systems.

In short, there's nothing very concerning about this Tiny PC, but there's nothing that makes it stand out either. It's also worth noting that Tiny didn't include delivery in the £499 price limit, so overshot the budget by £15.

**DETAILS**

**RRP** £514 (£437.45 ex VAT)
**BEST PRICE & PRODUCT INFORMATION**
Tiny 08708 303 156
**www.tiny.com**
**PROS** Reasonable graphics; 17in TFT
**CONS** Slow processor; over the £499 price limit
**VERDICT**
**The slow processor hampers performance, but overall it's a good budget system from Tiny**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **PERFORMANCE** | ★★★☆☆ |
| **VALUE FOR MONEY** | ★★★☆☆ |
| **OVERALL** | ★★★☆☆ |


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# Watford Aries Performa 5045

Watford's choice of case this month doesn't do much to inspire – the dull grey livery could certainly be spiced up a little. Sitting within it is an AMD Sempron 3000+ – it's the same processor used by the Nethighstreet entry and the Sysmark 2004 benchmark results are, as expected, very similar for the two PCs. Like the majority of the entries this month, a total of 512MB of PC3200 Ram backs up the processor adequately.

The integrated graphics are given a 64MB share of the main memory and perform at more or less the same level as the other two PCs without a devoted graphics card. As with all the other integrated graphics PCs, you can upgrade to an AGP graphics card at a later stage if you find it a little sluggish in the 3D department.

An Atec A170 17in TFT screen is supplied as standard. If you've never heard of the name Atec, you're not alone. It might not be well known but, as with the unbranded 17in TFT from Tiny, it performs well enough. Watford sells this monitor under its own Aries brand on its Savastore.com website for £150, so it's no surprise that it's included in this budget deal.

Other components include a Sony DVD-RW drive and an 80GB hard drive.

To keep you protected from everything the web has to throw at you, a one-year subscription to Panda Antivirus is included along with Ability Office Suite, PowerDVD and Roxio DVD Suite.

Like the other PCs with integrated graphics, this Watford suffers in terms of 3D performance, but the AMD Sempron processor powered it to an impressive second place in Sysmark 2004. The small hard drive and average 17in monitor are only to be expected with PCs at this price. Again, as with the Tiny entry, this is a decent effort by Watford but there are better deals available.

## DETAILS

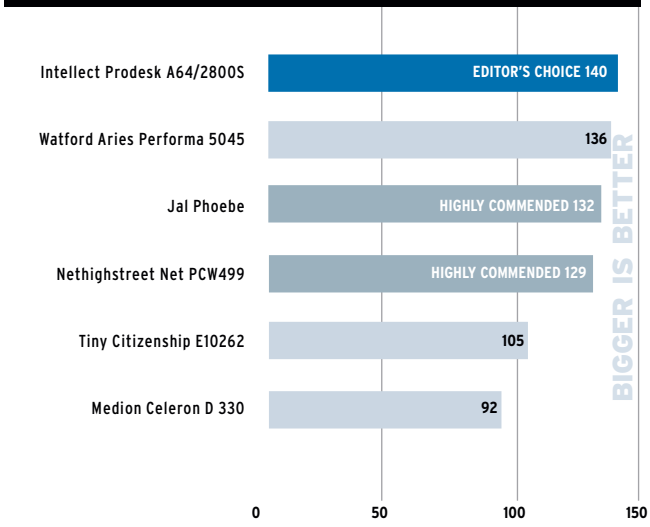
**RRP** £499.99 (£425.52 ex VAT)
**BEST PRICE & PRODUCT INFORMATION**
Watford 0870 027 0900
**www.savastore.com**
**PROS** Good processor; 17in TFT
**CONS** Integrated graphics; 80GB hard drive
**VERDICT**
**A reasonable effort with decent software, but this system can't compete with some of the other PCs here**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **PERFORMANCE** | ★★★☆☆ |
| **VALUE FOR MONEY** | ★★★☆☆ |
| **OVERALL** | ★★★☆☆ |

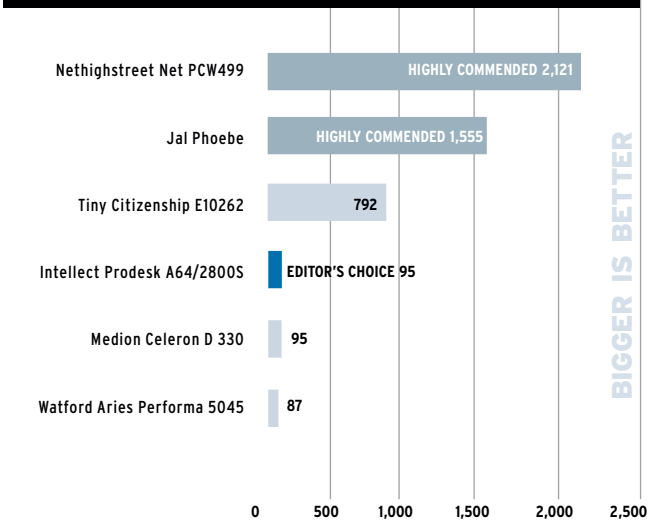
## Lab results

vnu labs

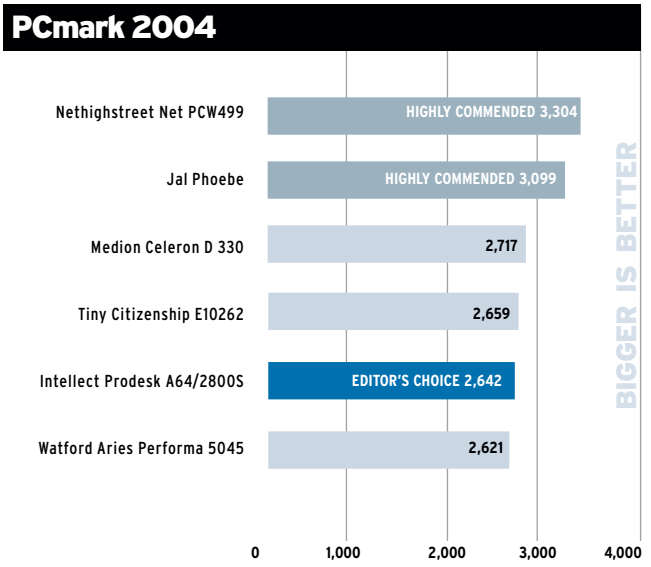
### Sysmark 2004




### 3Dmark03 (1,024 x 768 at 32bit)




### PCmark 2004




See page 12 for how we did the tests



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# Pick 'n' mix components on the web

**If you want to buy a low-cost PC but have a good idea of the configuration you want, there are plenty of vendors that will build a system to your requirements**

If you don't want the manufacturer to choose which components go into your PC, the alternative is to configure your own system. In the past, ordering separate components and building a PC yourself was far cheaper than buying a complete system from a vendor. However, a far more competitive market has pushed down PC prices and you'll find it hard to match the deals offered by manufacturers.

Complete systems also have the advantage of coming with a single warranty to cover all the hardware. Buy the individual components yourself and you'll have a variety of individual warranties to contend with.

Many manufacturers have websites that allow you to customise your PC. Listed below are a few examples of what we found.

## Dell

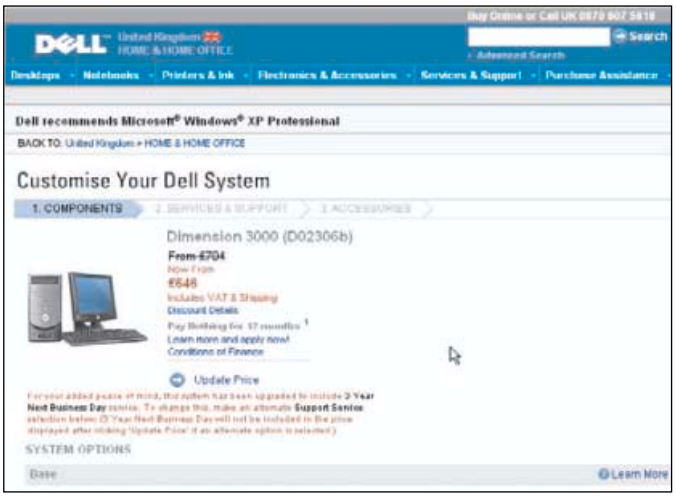
**www.dell.co.uk**

PC giant Dell has been plugging some of its cheaper PCs recently. If you visit its website, you'll find plenty of special offers that you can tailor to meet your own specific needs. We found the Dell Dimension 3000 available for £449 including VAT and delivery – this was a special offer knocked down from £499 that runs out before this issue goes on sale, but it gives you a taste of what's available.

The deal was an Intel Celeron D 340 (2.93GHz) processor, 512MB Ram, 17in TFT, 80GB hard drive and integrated Intel Extreme Graphics. Clicking the Configure & Buy button mysteriously put the price up to £546, but on closer inspection Dell had automatically increased the warranty to a three-year deal. The price went back to the original level once this was reduced to the one-year warranty.

Throughout the configuration process, it recommends certain upgrades. Rather oddly, Dell recommended a £60 upgrade to Windows XP Professional – something we'd only suggest to corporate users or those with large home networks.

The 17in TFT screen is a bonus, and the basic specification is reasonable, but it still doesn't beat the impressive Intellect entry this month.




**Dell offers systems at around £500 and it recommends upgrades**

## Evesham

**www.evesham.com**

Evesham has three main product lines for its desktop PCs: Axis, Evolution and E-style. The Evolution series is suggested for newcomers to computing who don't require optimum performance, and is therefore the place to pick up the budget systems.

The cheapest deal we could find on the Evesham site was for £558.99, which included VAT but not delivery. It features an Intel Celeron D 335(2.8GHz) along with 512MB of fast PC3200 (DDR400) Ram, a 120GB hard drive, combo optical drive and onboard ATI Radeon 9100 graphics. If you have an extra £50, the processor can be upgraded to an impressive Pentium 4 with a clock speed of 3GHz.

As expected at this price, the monitor isn't a TFT, but the Viewsonic E72F CRT will perform adequately and has a good looking flat screen. Along with Windows XP Home Edition, you also get Microsoft Works 8 and a two-year on-site warranty.

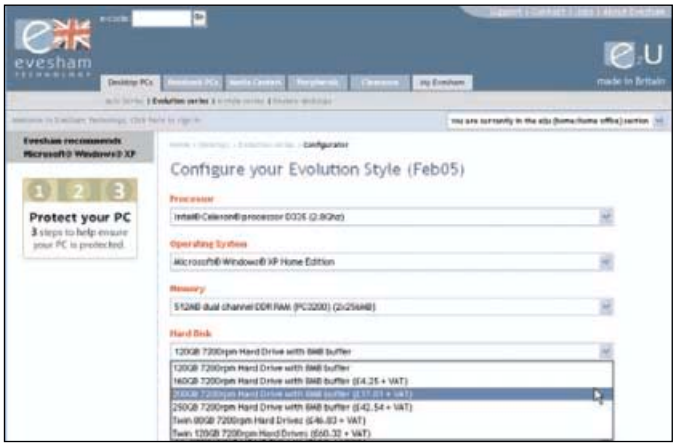
It's a shame Evesham doesn't let you push the price down further, perhaps by opting for a smaller hard drive or slower processor, but there's nothing to stop you from calling the sales line and asking for a quote.

## Mesh

**www.meshcomputers.com**

Mesh has an online configuration tool similar to Evesham's, and claims you can build your own system from as little as £269, plus £39 for delivery. You don't get an awful lot and it lacks a monitor, but you do get a Mini Tower case with an AMD Sempron 2600+, 256MB of DDR333 Ram, 128MB Geforce4 graphics card, DVD-Rom drive and an 80GB hard drive. XP Home is also included.

Using the Build to Order tool, we managed to spec up a complete system for just £461.70 including VAT and delivery. To cut costs, we sacrificed a TFT for a much cheaper 17in CRT monitor, and




**The cheaper systems at Evesham come in the Evolution range**

## Integrated graphics

**It's commonly thought that having integrated graphics means you can't run any 3D games, but the reality is quite different. Although they can't compete with normal graphics cards, it is possible to play even the latest games, albeit it with lower resolutions and detail levels. One of the main drawbacks is that integrated graphics have to share memory with the system. This is often configurable but, if you only have a small amount of system memory to start with, performance will suffer as a result.**

**Intel (www.intel.com) produces a list of the latest games that will run on its range of onboard graphics chipsets. Although none of the PCs reviewed in this group test use Intel's graphics chipsets, it's a good indication of the capability of integrated graphics.**

**On the Mesh site, you can build your own system from under £300**

the PC is based on an Asus A7N8X-VM motherboard, with 128MB integrated Geforce4 graphics, 512MB of DDR333 system memory and a Sempron 2600+. For an extra £20, the processor can be upgraded to the new Sempron 2800+. Also included in the package is a Logitech keyboard and optical mouse along with a three-year RTB warranty and XP Home.

It won't set the world alight with its specification, but as a second PC for your home network it is fine – it's a shame Mesh wouldn't submit it for review.

## PC World

**www.pcworld.co.uk**

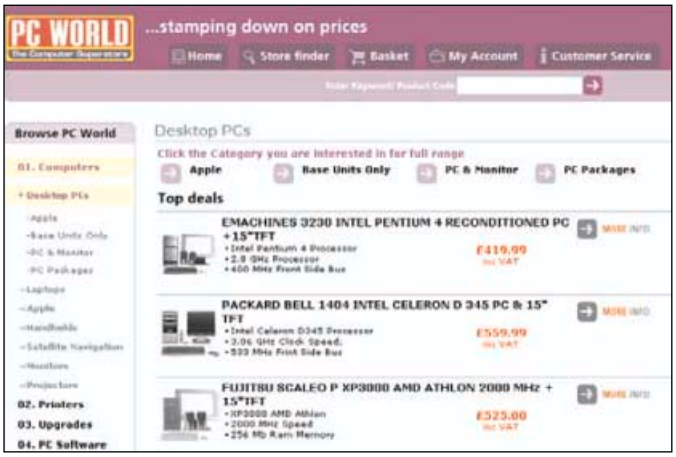
A range of systems from big names such as Packard Bell, HP, Emachines and Compaq are sold at PC World. Amazingly, when we visited, there was an Alba PC system, with monitor, for just £199, but if you intend running anything more than email, strike it off your list. It has an 1.8GHz Celeron, just 128MB of Ram, a 40GB hard drive and 14in CRT. Onboard graphics are a given and we shudder to think how XP Home would run on it.

Another slightly more realistic system on offer was from Compaq. For £509.99 you get a Sempron 3000+, 80GB hard drive and a DVD burner. A 17in TFT is supplied as standard, but just 256MB of Ram, 64MB of which goes to the onboard graphics, will hold things back.

Unlike the other three sites here, there's no way of manually reconfiguring the systems on offer. This means it's a case of what you see is what you get, which certainly limits its appeal.

We found plenty of other good deals, including some reconditioned 'as new' offerings, but the vast majority of these were out of stock.

**Note:** The information here is intended as a guide to what sort of deals you can get on the Internet. All prices stated were correct at time of going to press but, as with all online stores, they will probably have changed by the time you read this.




**You'll find a mixture of big-name PCs on the PC World site, but you won't be able to reconfigure them**

## Top tips for saving money when you're buying a PC

**Here are some hints to help you get the best possible deal and make sure you don't pay over the odds for a new PC.**

### >> Salvage components from old PCs

**Re-using items such as keyboards, mice and monitors will help to keep the price down.**

**If you have an ATX case and are confident of being able to install a new motherboard and processor, use it as the base for your new PC and save upwards of £20.**

### >> Opt for a CRT over a more expensive TFT screen

**TFTs are popular for a number of reasons – they save space and produce a brighter display than standard CRT models. The advantage of CRTs is that they are far cheaper and can offer better image quality.**

### >> Watch out for cheap components

**Manufacturers will sometimes cut costs with slower hard drives (those under 7,200rpm), slower memory (PC2700) and non-branded monitors. Try to find reviews for each of the main components – you'll find plenty of reviews at www.pcw.co.uk/products/hardware.**

### >> Get rid of items you don't need

**If there's any hardware or software in your chosen package that you don't need, ask for it to be removed, and don't forget to make sure the quote is adjusted accordingly.**

### >> Don't go for the latest graphics card

**Even if you're building a gaming PC, it's best to avoid the very latest graphics cards if you are on a tight budget. Give it six months and their prices will plummet, so go for one of the older models. If you're not interested in gaming, opting for integrated graphics will not be such a big concern.**

### >> Don't be tempted to buy extras you don't need

**Many vendors will offer additional upgrades such as printers, software and various other peripherals. Although it can be tempting to add extra items to your shopping basket, especially if it looks as though the items have been discounted, it's still worth checking that you can't buy these cheaper elsewhere and that you really need them.**

### >> Don't be pushed into pricey extended warranties

**A decent warranty for your PC or components is important, but only if the price is right. There's no point in getting a five-year warranty if you're likely to upgrade within three years or so. If you get a return to base warranty, check who pays the courier charges.**

### >> Go for Windows XP Home, not Professional Edition

**Windows XP Professional Edition is designed for corporate users or those with large home networks. You can save up to £60 by going for the Home Edition of Windows. Check out the differences between Home and Professional at www.microsoft.com/windowsxp/home.**

### >> Be aware of all the charges

**Always check whether VAT is included in your quote – if it's added at the last stage of your order it can come as quite a shock. Delivery charges can also push up the price, sometimes as much as £50. Some discounts advertised on websites may only apply to orders placed via the web, and not those taken over the phone.**



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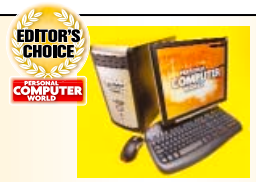
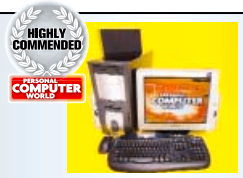
## Table of features

| |  | | |
|---|---|---|---|
| **MANUFACTURER** | **INTELLECT** | **JAL** | |
| **MODEL NAME** | **PRODESK A64/2800S** | **PHOEBE** | |
| Price inc VAT (ex VAT) | £499 (£424.68) | £499 (£424.68) | |
| Sales telephone | 08701 225 590 | 08707 525 810 | |
| URL | www.intellect.uk.com | www.jal.co.uk | |
| **HARDWARE SPECS** | | | |
| Processor | AMD Athlon 64, 1.8GHz | AMD Athlon 64, 1.75 GHz | |
| Memory quantity and type | 512MB PC3200 | 512MB PC3200 | |
| Occupied/spare memory (Ram slots) | 1/1 | 1/1 | |
| Max memory in this configuration | 1.5GB | 1.5GB | |
| Hard disk manufacturer and model | Maxtor ST380013 AS 7,200rpm, SerialATA/150 | Maxtor 6Y120L0 7,200rpm, UltraATA/133 | |
| Hard disk size | 80GB | 120GB | |
| Motherboard manufacturer/model | Gigabyte GA-K8VM800M | ASRock K8 Combo Z | |
| Chipset manufacturer/model | Via K8M800, AMD Hammer | ULI/ALI M1689, AMD Hammer | |
| **EXPANSION AND I/O** | | | |
| Number of 3.5/5.25in bays | 3/1 | 6/4 | |
| Number of free 3.5/5.25in bays | 1/1 | 4/2 | |
| Number of PCI/shared ports | 3/0 | 3/0 | |
| Number of free PCI/shared ports | 2/0 | 2/0 | |
| Number of USB2/Firewire ports | 6/0 | 6/0 | |
| Number of serial/parallel/PS/2 ports | 1/1/2 | 1/1/2 | |
| **MULTIMEDIA** | | | |
| Primary optical drive | NEC DVD-RW ND-3500AG (Dual layer) | BTC CD-RW 5232IA | |
| Drive speed | DVD-R/-RW: 16x/4x, DVD+R/+RW: 16x/4x, DVD-Rom: 16x, CD-R/RW: 48x/24x, CD-Rom: 48x | CD-R/RW: 52x/32x, CD-Rom: 52x | |
| Secondary optical drive | N/A | Sony DVD-Rom DDU1613 | |
| Drive speed | N/A | DVD-Rom: 16x, CD-Rom: 40x | |
| Soundcard manufacturer and model | Via AC97 Enhanced Audio Controller | ULI/ALI M5455 AC97 Audio Controller | |
| Speakers manufacturer and model | N/A | Altec Lansing VS-2120 | |
| Graphics card manufacturer and model | Via/S3G Unichromell Graphics | ATI Radeon 9550 | |
| Chipset | Via/S3G | Radeon 9550 | |
| Memory | 64MB | 128MB | |
| Monitor manufacturer and model | Sharp LL-172AB | Viewsonic E72f+ | |
| Monitor max viewable diagonal | 17in TFT | 16in CRT | |
| Maximum resolution | 1,280 x 1,024 | 1,280 x 1,024 | |
| **OTHER INFORMATION** | | | |
| Bundled peripherals and software | Windows XP Home, AVG Antivirus, Open Office, Cyberlink PowerDVD, Nero Burning Rom 6 | Windows XP Home, Nero Burning Rom, Cyberlink PowerDVD, PC-Cillin, Logitech Optical Desktop | |
| Standard warranty* | 1yr on site | 2yrs on site (RTB labour only for life) | |
| **SCORES** | | | |
| Features | ★★★★☆ | ★★★☆☆ | |
| Performance | ★★★☆☆ | ★★★★☆ | |
| Value for money | ★★★★★ | ★★★★☆ | |
| Overall | ★★★★☆ | ★★★★☆ | |

*RTB = return to base, C&R = collect and return

## For the best PC prices go to www.pcw.co.uk/bestprices

| | |  | | |
|---|---|---|---|---|
| | **MEDION** | **NETHIGHSTREET** | **TINY** | **WATFORD** |
| | **CELERON D 330** | **NET PCW499** | **CITIZENSHIP E10262** | **ARIES PERFORMA 5045** |
| | £499 (£424.68) | £499 (£424.68) | £514 (£437.45) | £499.99 (£425.52) |
| | 0845 608 1100 | 08700 271 339 | 08708 303 156 | 0870 027 0900 |
| | www.woolworths.co.uk | www.nethighstreet.com | www.tiny.com | www.savastore.com |
| | | | | |
| | Intel Celeron D, 2.66GHz | AMD Sempron, 2GHz | Intel Celeron D, 2.4GHz | AMD Sempron, 2GHz |
| | 256MB PC3200 | 512MB PC3200 | 512MB PC2700 | 512MB PC3200 |
| | 1/1 | 2/1 | 1/1 | 1/1 |
| | 1.25GB | 1.5GB | 1.5GB | 1.5GB |
| | Seagate ST380012A 7,200rpm, UltraATA/100 | Maxtor 6Y120L0 7,200rpm, UltraATA/133 | Seagate ST3120022A 7,200rpm, Ultra-ATA/100 | HDS72258 0VLSA80 7,200rpm, SerialATA/150 |
| | 80GB | 120GB | 120GB | 80GB |
| | MSI 661FM2-V MS-7060 | MSI K7N2 Delta-ILSR MS-6570G | MSI P4MAM-V MS-6787 v2.0 | MSI K8MM-ILSR MS-6741 |
| | Sis 661FX | Nvidia Nforce2 Ultra 400 | Via VT8751A Apollo P4M266A | Via K8M800, AMD Hammer |
| | | | | |
| | 3/2 | 6/4 | 4/3 | 4/2 |
| | 2/1 | 4/3 | 3/2 | 2/1 |
| | 3/0 | 4/0 | 3/0 | 3/0 |
| | 2/0 | 3/0 | 2/0 | 3/0 |
| | 6/1 | 4/0 | 6/0 | 6/2 |
| | 1/1/2 | 1/1/2 | 1/12 | 1/1/2 |
| | | | | |
| | Pioneer DVD-RW (Dual layer) | NEC DVD-RW ND-3500AG (Dual layer) | VOM-12E48X (Dual layer) | Sony DVD RW DW-D22A (Dual layer) |
| | DVD-R/RW: 16x/4x, DVD+R/RW: 16x/4x, DVD-Rom: 16x, CD-R/RW: 32x/24x, CD-Rom: 40x | DVD-R/-RW: 16x/4x, DVD+R/+RW: 16x/4x, DVD-Rom: 16x, CD-R/RW: 48x/24x, CD-Rom: 48x | DVD-R/-RW: 8x/4x, DVD+R/+RW: 12x/4x, DVD-Rom: 12x, CD-R/RW: 40x/24x, CD-Rom: 40x | DVD-R/RW: 8x/4x, DVD+R/RW: 16x/4x, DVD-Rom: 16x, CD-R/RW: 48x/24x, CD-Rom: 48x |
| | N/A | N/A | N/A | N/A |
| | N/A | N/A | N/A | N/A |
| | Sis 7012 Audio Device | Nvidia MCP2 – Audio Codec Interface | Via AC97 Enhanced Audio Controller | Via AC97 Enhanced Audio Controller |
| | Stereo speakers on monitor | Trust 2500P | OEM S821-107 | Altec Lansing VS-2120 |
| | Sis 661FX | ATI Radeon 9550 | Nvidia Geforce FX 5200 | Via/S3G Unichromell Graphics |
| | Sis 661FX | Radeon 9550 | Nvidia Geforce FX 5200 | Via/S3G |
| | 32MB | 128MB | 128MB | 64MB |
| | Medion MD41885FG | Samsung Syncmaster 793DF | OEM L157 | Atec Neoview A170 |
| | 15in TFT | 16in CRT | 17in TFT | 17in TFT |
| | 1,024 x 768 | 1,280 x 1,024 | 1,280 x 1,024 | 1,280 x 1,024 |
| | | | | |
| | HP PSC1215, Windows XP Home, Microsoft Works 8, Cyberlink Medion Home Cinema, Nero Burning Rom 6 & Recode 2SE, AOL | Windows XP Home, Open Office, Cyberlink PowerDVD, Nero Express | Windows XP Home, Microsoft Works 7, Cyberlink PowerDVD | Windows XP Home, Ability Office Suite, Cyberlink PowerDVD 5, Roxio DVD Suite 7, Panda Antivirus (1yr subscription) |
| | 2yrs onsite | 1yr RTB | 3yrs RTB | 1yr on site, 4yrs RTB labour only |
| | | | | |
| | ★★★★☆ | ★★★★☆ | ★★★☆☆ | ★★★☆☆ |
| | ★★☆☆☆ | ★★★★☆ | ★★★☆☆ | ★★★☆☆ |
| | ★★★☆☆ | ★★★★☆ | ★★★☆☆ | ★★★☆☆ |
| | ★★★☆☆ | ★★★★☆ | ★★★☆☆ | ★★★☆☆ |

Vendors of group test products are only obliged to sell them at the prices quoted here (which include delivery and credit card surcharges) for the life of this PCW issue. They may also change components under certain circumstances.



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# Editor's Choice

Persuading some manufacturers to participate in this group test proved trickier than we expected. Both Dell and Packard Bell have recently been shouting about their bargain systems, but despite our best efforts neither was willing to submit a model. Regulars such as Mesh and Evesham also declined, declaring that this price point wasn't their market.

Perhaps the profit margins are just too tight on these budget PCs and the lucrative high-performance customer is far more attractive. Or maybe these manufacturers thought we'd slate their bargain machines for returning poor benchmark results – as you'll see from our reviews, this certainly wasn't the case. Whatever the reason, it's a real shame they didn't join in and that we had to resort to pricing up budget machines using their websites. It begs the question, if they're happy to sell these PCs on their sites, why are they not so keen to send them in for review?

A few years back, buying a decent PC including a keyboard and mouse along with a monitor for under £500, would have been almost impossible. So what can you expect to do with these PCs? Basic office and Internet tasks have never required a lightning-fast PC, and all the models this month will be more than capable of catering for your word processing and email needs.

The Medion entry concerned us with its 256MB of Ram, particularly when 32MB of

**'Why are some manufacturers not keen to send budget PCs in for review?'**

it is used for the integrated graphics. With limited functionality, Windows XP is capable of running with just 64MB of Ram, and 128MB is Microsoft's minimum requirement for all components to work. In reality, even with 256MB of Ram you'll experience nasty delays when multitasking, and running memory-hungry applications such as video editing. When it comes to memory, today's software packages are greedier than ever before, and as a result we recommend nothing less than 512MB of Ram.

PCs with integrated graphics shouldn't be immediately discarded as a waste of money. Most games will run, but you'll need to lower the resolution and detail level.

**Intellect Prodesk A64/2800S**

**Nethighstreet Net PCW499**

**Jal Phoebe**

CRT monitors also save a large amount of money and two manufacturers this month went for one over a more expensive and flashy TFT screen.

## The winners

Of the manufacturers who submitted systems this month, there was one clear winner. Our **Editor's Choice**, the **Intellect Prodesk A64/2800S** was a great example of a well-balanced budget PC where money has been spent in all the right places. The AMD Athlon 64 2800+ with a clock speed of 1.8GHz is a solid processor and comes supplied with a suitable 512MB of Ram. But the real jewel in the crown is the Sharp LL-172AB 17in TFT screen. We've seen Intellect include quality Sharp monitors many times before, but we never expected one to come with this budget PC.

The integrated graphics should only be of concern to gamers who want to play games at medium to high detail levels. The 80GB hard drive will certainly need a partner at some point in the near future if you plan to store a lot of music, video or photos on your system. The warranty of just one year could be improved upon, but it is an on-site agreement, so you don't have to worry about shipping the PC back and forth if things go wrong.

The first **Highly Commended** award goes to the **Nethighstreet Net PCW499**. Making use of AMD's relatively new AMD Sempron processor, with a 2GHz clock speed, it managed to notch up reasonable scores in all our benchmarks. Instead of integrated graphics, it features a Radeon 9550 graphics card – nothing that's going to dazzle you with its processing power, but certainly better than the integrated option. The one-year return to base warranty is disappointing, although the Net PCW499 does feature an NEC DVD writer and a good quality CRT monitor.

The interestingly named **Jal Phoebe** system also scoops a **Highly Commended** award. There are more than a few similarities to the Nethighstreet entry, including a Radeon 9550 graphics card, a good-sized 120GB hard drive and a CRT monitor – although in this case the CRT is a Viewsonic model. But the warranty puts Nethighstreet to shame, with a two-years on-site service followed by return to base labour for life.

On the whole, we were impressed with what the six vendors managed to produce with such a tight budget and it shows you don't have to spend a small fortune on a brand new PC.


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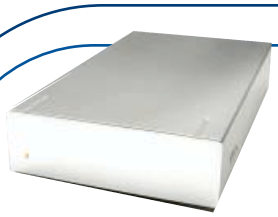

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- 3-year advance replacement warranty

**Available Models**:
Photon LCD/TFT 19"; Photon LCD/TFT 20.1"
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- Ideal for notebook/laptop users as mobile storage
- Sleek, robust enclosure - design by F.A. Porsche
- Compatible with Windows® backup utility
- 2 years manufacturer's warranty as standard

**Available Models**:
USB2.0 - 40GB, 60GB, 80GB, 100GB
FireWire & USB2.0 - 40GB, 60GB, 80GB, 100GB

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- 2 years manufacturer's warranty as standard

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Slim 8x DVD+/-RW Double layer & CD-RW
Mobile 24x24x24x CD-RW 8x DVD Combo

## NEW! LaCie Globetrotter Linux Mobile Drive

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- A new portable concept for computing with easy Linux

**Available Models**:
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## NEW! LaCie 'Biggest Disk' FireWire 800 & USB2.0 RAID

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- Automatic online rebuilding with RAID 5
- 2 years manufacturer's warranty as standard

**Available Models**:
1000GB, 1600GB, 2000GB

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- Playback your photo's and movies **directly** on any TV
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- Ships with remote control, power unit and all cables
- Store 20,000 MP3's, 15 MPEG-2 or 80 DivX movies, 1,000,000 photo's in VGA, or up to 80GB of data

**Available Models**:
USB2.0 - 40GB, 80GB

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- For Windows®, Mac OS® and Linux
- 2 years manufacturer's warranty as standard

**Available Models**:
'd2' mini NAS & USB2.0- 250GB, 400GB, 500GB
Ethernet Disk XP embedded- 800GB, 1000GB

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# Multimedia unleashed

**WORDS:** RORY REID **PHOTOS:** BRUCE MACKIE

**Listening to music and watching DVDs anywhere in your home without having to deal with cable spaghetti is now possible. Find out if wireless streaming devices deliver on their promise**

When we last looked at wireless multimedia streaming devices in October 2004 we were impressed with the potential of this technology, but were left with mixed feelings about the effectiveness of the devices available at the time. Limited to 11Mbits/sec 802.11b, most of those devices were fine for audio streaming, but simply didn't have enough bandwidth to cope reliably with the heavy demands of high-quality video streaming.

Fortunately technology has progressed in leaps and bounds since then, with more products now supporting the newer and faster 802.11g standard. With a theoretical bandwidth of 54Mbits/sec, in theory there should be enough headroom in the new crop of appliances to stream your DVDs and mp3s without tears. We had hoped to make this an exclusively 802.11g round-up, but as the audio-only devices out there are still mostly 802.11b, we felt it would be incomplete if we didn't include these.

We've reviewed six of the latest models from top-name vendors, with a range of capabilities, from audio-only boxes to those resembling a standard DVD player with added wireless capabilities. But do they now live up to their promise? Find out over the next few pages. We've also investigated a couple of practical scenarios for setting up your wireless dream home, and taken a peek into the future to see what multimedia tricks wireless networking has up its sleeve.



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## Apple Airport Express

Apple's Airport Express is the most compact digital media streamer here. Unlike many of its rivals, it is a discrete affair that connects to a three-pin mains socket.

Given Apple's success in the digital music market, it's no surprise that this is an audio-only device, and it's the only such unit here offering 802.11g speeds. It includes a 3.5in audio jack – enough to connect a set of amplified speakers or a pair of headphones, but it lacks digital outputs, which may disappoint some audio enthusiasts.

Options for connecting the Airport Express to a PC are more abundant. It has an integrated Ethernet port, as well as a USB port that can be used to share a printer. There's a built-in NAT (Network Address Translation) firewall plus Wep and WPA encryption for securely sharing your Internet connection via an ADSL modem.

Installation is easy in principle. Connect the Airport Express to the mains, attach it to a hifi and configure the software, which includes the Itunes media player.

You'll need a wireless adapter for your PC. The Airport Express is only fully compatible with those that can be controlled via Windows' network management tools. Some wireless adapters give you the option of using proprietary software to control your PC's network settings, so check whether they will relinquish control to Windows before making a purchase.

Given the price of the Airport Express, we were disappointed that a wireless remote control is an optional third-party extra costing £39.95. Without one, you'll need to return to your PC to adjust your track selections.

These gripes aside, the Airport Express is a strong product. It lacks the bells and whistles of its larger counterparts, but is the only digital media streamer available that supports music bought through Itunes – a factor that should make it hugely attractive to Ipod owners.

**DETAILS**

**RRP** £88.99 (£75.73 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Apple 0800 039 1010
**www.apple.com/uk**
**PROS** Small; aac compatible; Internet gateway function
**CONS** Remote control costs extra
**VERDICT**
**Lacks the features seen on rival devices, but is ideal for Ipod owners**

| | |
|---|---|
| **FEATURES** | ★★☆☆☆ |
| **PERFORMANCE** | ★★★☆☆ |
| **VALUE FOR MONEY** | ★★☆☆☆ |
| **OVERALL** | ★★★☆☆ |

## Creative SB Wireless Music

Like Apple's Airport Express, the Sound Blaster Wireless Music is an audio-only streaming appliance, but offers 802.11b speeds (11Mbits/sec) only. Whereas Apple has opted for a compact device that connects directly to the mains, Creative's approach is slightly more elaborate.

The package consists of two separate devices. One is a media receiver which provides the wireless link to your PC, plus the connection to your stereo, TV or a set of amplified speakers via analogue RCA or digital optical S/PDIF outputs. The latter should appeal to audio enthusiasts as it provides superior sound quality.

The other component is a large RF remote control with an integrated LCD screen. Unlike the infra-red remotes seen elsewhere in this group test, this lets you to control audio playback without needing a direct line of sight between the remote and the receiver. You can operate the Sound Blaster Wireless Music from anywhere up to 32 feet away, although without multiple receivers, playback is restricted to a single set of speakers.

The RF remote is useful if you need to keep the receiver out of sight or wander about while listening, and its LCD screen removes the need to select music via your PC or TV screen, as is the case with some others.

Like most of the devices in this test, format compatibility is limited. It plays mp3, wav and wma files, but doesn't support music encoded using with Digital Rights Management (DRM), such as those bought from Napster or Itunes.

Users with existing high-speed 802.11g networks may prefer to use Apple's Airport Express, since like the Netgear MP101, the Sound Blaster Wireless Music will form a bottleneck and reduce network throughput from a maximum of 54Mbits/sec to 11Mbits/sec.

Despite this limitation, Creative has delivered an innovative product that serves its purpose well.

**DETAILS**

**RRP** £150 (£127.65 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Creative
0800 376 7954
**http://europe.creative.com**
**PROS** RF Remote; easy to use
**CONS** Bulky remote
**VERDICT**
**Expensive for an audio-only product, but with some innovative and useful features**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★☆☆☆ |
| **OVERALL** | ★★★★☆ |


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# D-Link DSM 320

The D-Link DSM 320 is one of the more attractive products here. Its design is reminiscent of a home DVD player, but is slimmer and has a more solid feel than the Pinnacle Showcenter (see next page).

Setup is straightforward; it can be used over a wired Ethernet connection, and incorporates an 802.11g wireless chip. Configuration is handled by an automatic setup wizard, but if you plan to add the device to an existing wireless infrastructure (rather than an ad hoc network), you may need to brush up on your wireless networking knowledge.

Supported audio and video formats include mp3, wma, mpeg4 and jpg, but there is no support for wmv or DRM-protected audio files from Itunes. The DSM 320 does, however, support protected wma files such as those bought from the Napster music store.

The bundled Media Server software is incompatible with this service, though, so you'll need to download Windows Media Connect software and the Microsoft .Net Framework (available via Windows Update) to enable this feature.

We tested the DSM 320 using a variety of formats. It handled audio streaming without breaking a sweat, but video streaming was often unreliable, despite us using a high-speed 802.11g wireless network.

The problem lay in the fact that video would often remain perfectly smooth, but the accompanying audio often became desynchronised, which made our test videos look like badly dubbed foreign films.

D-Link plans to release a firmware upgrade which it claims will alleviate many of the bugs found in our review sample, but this was unavailable at the time of writing. In its current state, the DSM 320 is a likeable and feature-rich machine. Unfortunately, it does not deliver on all its promises.

**DETAILS**

**RRP** £139.32 (£118.57 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
D-Link 020 8731 5555
**www.dlink.co.uk**
**PROS** Supports protected wma files
**CONS** Firmware bugs need to be fixed
**VERDICT**
**Has great potential thanks to its impressive feature list, but doesn't fully live up to the hype**

| | |
|---|---|
| **FEATURES** | ★★★★★ |
| **PERFORMANCE** | ★★☆☆☆ |
| **VALUE FOR MONEY** | ★★★☆☆ |
| **OVERALL** | ★★★☆☆ |

# Netgear MP101

Like the Creative offering, Netgear's MP101 is an 802.11b audio-only device. We first featured it in our October 2004 issue, where it received a Highly Commended award for its strong performance and attractive design.

The MP101 fares well against today's competition, thanks in part to its straightforward configuration procedure. You just install the Media Server software, connect the device to a power supply and amplified speaker system, and choose between wired Lan or 802.11b wireless connections.

Confusingly, Netgear proclaims '802.11b/g compatible' on the box, which means it is not a 'g' product, but will work on a 'g' network. However it will not give you the speed benefits of this standard.

The small footprint of the MP101 makes it more practical for installation in awkward locations. Analogue RCA audio and 1.5mm headphone jacks are included, but a set of digital outputs would have been good.

A bright four-line LCD screen helps during the configuration process and lets you easily select tracks and playlists from a reasonable distance away. The infra-red remote control is well laid out and has dedicated buttons for choosing a playlist, genre, artist and so on.

We weren't completely happy with the MP101's compatibility with audio formats. It can play standard mp3 and wma files, but cannot play DRM-protected audio from Napster and Itunes. Although you'll find a free 30-day trial of Listen.com's Rhapsody music service and Radio AOL advertised in the data sheet, these services aren't currently available outside the US.

It's much more affordable than Creative's product, which makes ideal if you want to install multiple units around your house. This, combined with its ease of use and solid performance, means it retains its Highly Commended status.

**DETAILS**

**RRP** £74.99 (£63.82 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Netgear 01344 397 021
**www.netgear.co.uk**
**PROS** Good performance and design
**CONS** Incompatible with several online music services
**VERDICT**
**Lacks compatibility with some audio formats, but works well and is great value for money**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★★ |
| **OVERALL** | ★★★★☆ |



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# Philips Streamium MX6000i

Inside the Streamium MX6000i's rather substantial packaging is enough equipment to make the most ardent of technophiles giddy with anticipation.The main decoder unit is a chunky affair that incorporates a five-disc CD/DVD changer, FM/MW radio tuner and a media receiver that decodes streaming video, audio and still photos.

Unlike the other devices here, the MX6000i package also contains a powerful 6 x 75w (RMS) surround amplifier and a stylish 5.1 speaker set. As a result, it can be seen as a replacement for your existing AV installation, rather than a simple add-on.

Whereas some of the products in this group test were difficult to configure, we were able to get this device up and running over both wired and wireless 802.11g networks in a matter of minutes.

Like most products of this type, streaming high-quality mpeg2 videos can result in jerky playback, particularly if there is a lot of interference from other wireless devices. The MX6000i wasn't quite as impressive as Pinnacle's Showcenter, but in our tests it delivered video with fairly consistent frame rates.

It can access Internet radio stations and stream online video content but the selection of providers if fairly limited if you have an Internet gateway. Unfortunately it lacks support for Windows Media (wma/wmv) or Itunes' aac formats.

For those who don't have a wireless network, the MX6000i includes a PC Link wireless adapter for your PC, and multimedia content is navigated using the remote control and TV interface.

Philips' experience in consumer devices seems to have paid off. The MX6000i may be the most expensive unit here, but if you're planning to upgrade your audio/video setup and want strong digital multimedia support, it's the best solution we've seen.

**DETAILS**

**RRP** £499 (£424.68 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Streamium 020 7949 0069
**www.streamium.com**
**PROS** DVD playback; surround speaker system
**CONS** No wmv/wma compatibility
**VERDICT**
**An ideal solution for those who want to bring their living room into the digital age**

| | |
|---|---|
| **FEATURES** | ★★★★★ |
| **PERFORMANCE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

# Pinnacle Showcenter 1000G

The Showcenter 1000G is the latest incarnation of Pinnacle's well-known digital media receiver. The most notable difference between this edition and its predecessor is the inclusion of an 802.11g PC Card that allows wireless connectivity between the Showcenter and your PC, but you'll need a wireless network adapter to enable this.

The rest of the unit remains largely unchanged. Inside, the device is mostly hollow, but the large case has a good range of digital and analogue output ports at the rear. You'll find S-video, Composite, Scart, and S/PDIF jacks, as well as an Ethernet port, should you prefer a wired connection.

We had mixed feelings about the Showcenter 1000G's ease of use. Despite Pinnacle presenting it as a new product, we were disappointed to see that it uses the same firmware as its predecessor. This makes its menus difficult to comprehend, and it was only after finishing the convoluted setup procedure that the product upgraded itself to the latest version.

Fortunately the updated interface is slightly more user friendly than its predecessor. We were able to stream digital images, video and audio without much fuss, and frame rates remained consistent throughout full-length movies.

The Showcenter Wireless G is compatible with mpeg1, mpeg2, DivX and Xvid avi videos, as well as mp3 and pcm audio formats. All incompatible files are converted and played on the fly.

This is the only device here that can stream TV broadcasts, but you'll need to install Pinnacle's PCTV Pro card.

On the whole, the latest incarnation of the Showcenter did enough to satisfy our desire for faster streaming of digital content. It's still not quite perfect, but it stands out thanks to its solid performance and gets our Highly Commended award.

**DETAILS**

**RRP** £199 (£169.36 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Pinnacle 01895 442 003
**www.pinnaclesys.co.uk**
**PROS** Good performance and format compatibility
**CONS** Clumsy setup procedure
**VERDICT**
**Still one of the best digital streaming devices available, but it could be easier to use**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **PERFORMANCE** | ★★★★★ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

## What you need to begin streaming

Jal Phoebe
£499 (£424.68 ex VAT)
www.jal.co.uk
For review, see page 105

Belkin Wireless Pre-N Router
£102.12 (£86.91 ex VAT)
www.belkin.co.uk

Creative Labs Inspire T7700
£199 (£169.36 ex VAT)
http://europe.creative.com

You could go one step further and connect your entire home using wireless media streaming devices. The following example highlights products that can be used side by side to provide wireless audio, video and image streaming in all areas of your home.

Harman Kardon Soundsticks
£115 (£97.87 ex VAT)
www.komplett.co.uk

Creative Gigaworks S750
£329 (£280 ex VAT)
http://europe.creative.com

Netgear MP101 £74.99
(£63.82 ex VAT)
www.netgear.co.ukv

This example shows the basic requirements for setting up a wireless media streaming system using products that we've reviewed in this group test and over the past few months in *PCW*. The wireless access point is optional and could be replaced by a simple USB wireless adapter to form an ad-hoc network.

Apple Airport Express
£89 (£75.74 ex VAT)
www.apple.com/uk

Intellect Prodesk
A64/2800S PC
£499 (£424.68 ex VAT)
www.intellect.uk.com

Belkin Wireless Pre-N Router
£102.12 (£86.89 ex VAT)
www.belkin.co.uk

Philips Streamium MX6000i
£499 (£424.68 ex VAT)
www.streamium.com

Creative Gigaworks S750
£329 (£280 ex VAT)
http://europe.creative.com

## Quality of service – the missing link

Wireless networks are pretty dumb when it comes to multimedia, and it's all because they work on the egalitarian principle that all data is equal. A data packet containing a piece of a spreadsheet is regarded as just as important as a packet of data from the DVD you're trying to watch.

But the problem is that streaming media really needs to be an uninterrupted stream of data, not subject to delays caused by other types of data on the network – in effect multimedia data needs its own dedicated portion of the network's total bandwidth. The technical term for this prioritisation of bandwidth is Quality of Service, normally abbreviated to QoS.

Although there's no formal QoS standard yet, IEEE has published the 802.11e QoS draft extensions for wireless networks. The Wifi Alliance, the body that controls Wifi certification, has incorporated these extensions into its Wifi Multimedia (WMM) standard as a kind of stopgap until true QoS standards are available. WMM works by identifying multimedia data and reducing the transmit time between packets for such data, thus effectively prioritising it and making a multimedia stream less likely to degrade in the presence of other network traffic.

At the moment there aren't any WMM-certified multimedia streaming devices around (in fact there aren't any that are even Wifi certified, although this is more a reflection of the lengthy certification procedure than any interoperability problems). Many access points and adapters are WMM certified, however, and these currently represent the best choice for your infrastructure if you're interested in wireless streaming. Some wireless access points (for example Belkin's Pre-N router) implement 802.11e-based QoS but don't carry WMM certification – you'll need to look at the product's data sheet to find out whether this is the case.

Many of the products reviewed here support a wired Ethernet connection from your PC, and if you're having trouble with wireless connectivity due to interference or a weak signal, this might be your only option.

Kelvyn Taylor



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## Table of features

| | | | | HIGHLY COMMENDED | EDITOR'S CHOICE | HIGHLY COMMENDED |
|---|---|---|---|---|---|---|
| **MANUFACTURER** | **APPLE** | **CREATIVE LABS** | **DLINK** | **NETGEAR** | **PHILIPS** | **PINNACLE** |
| **MODEL** | **AIRPORT EXPRESS** | **SOUND BLASTER WIRELESS MUSIC** | **DSM 320** | **MP101** | **STREAMIUM MX6000I** | **SHOWCENTER 1000G** |
| Price inc VAT (ex VAT) | £88.99 (£75.73) | £150 (£127.65) | £139.32 (£118.57) | £74.99 (£63.82) | £499 (£424.68) | £199 (£169.36) |
| Sales telephone | 0800 039 1010 | 0800 376 7954 | 020 8731 5555 | 01344 397 021 | 020 7949 0069 | 01895 442 003 |
| URL | www.apple.com/uk/ | http://europe.creative.com | www.dlink.co.uk | www.netgear.co.uk | www.streamium.com | www.pinnaclesys.com |
| **HARDWARE SPECS** | | | | | | |
| Image streaming | ✗ | ✗ | ✔ | ✗ | ✔ | ✔ |
| Audio streaming | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Video streaming | ✗ | ✗ | ✔ | ✗ | ✔ | ✔ |
| Internet radio | ✗ | ✗ | ✔ | ✔ | ✔ | ✔ |
| **AUDIO FORMATS** | | | | | | |
| mp3 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| aac | ✔ | ✗ | ✗ | ✗ | ✗ | ✗ |
| wav | ✔ | ✔ | ✔ | ✗ | ✔ | ✔ |
| wma | ✗ | ✔ | ✔ | ✔ | ✗ | ✔ |
| DRM | aac | ✗ | wma | ✗ | ✗ | ✗ |
| **VIDEO FORMATS** | | | | | | |
| wmv | N/A | N/A | ✗ | N/A | ✗ | ✔ |
| mpeg1 | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| mpeg2 | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| mpeg4 | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| Xvid | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| DivX | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| **IMAGE FORMATS** | | | | | | |
| jpeg | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| bmp | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| gif | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| png | N/A | N/A | ✔ | N/A | ✔ | ✔ |
| **OPERATING SYSTEM** | | | | | | |
| Windows 98 | ✗ | ✔ | ✗ | ✔ | ✗ | ✗ |
| Windows ME | ✗ | ✔ | ✗ | ✔ | ✗ | ✗ |
| Windows 2000 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Windows XP | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Mac OSX | ✔ | ✗ | ✗ | ✗ | ✗ | ✗ |
| **CONNECTIVITY** | | | | | | |
| Wireless standard | 802.11g | 802.11b | 802.11g | 802.11b | 802.11g | 802.11g |
| Wep encryption | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| WPA encryption | ✔ | ✗ | ✗ | ✗ | ✔ | ✗ |
| WMM (Wifi Multimedia) certification | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| Ethernet port | ✔ | ✗ | ✔ | ✔ | ✔ | ✔ |
| RCA | ✗ | ✔ | ✔ | ✔ | ✔ | ✔ |
| S-Video | ✗ | N/A | ✔ | ✗ | ✔ | ✔ |
| Scart | ✗ | N/A | ✔ | ✗ | ✔ | ✔ |
| Remote control | Optional | ✔ | ✔ | ✔ | ✔ | ✔ |
| S/PDIF | ✗ | ✗ | ✔ | ✗ | ✔ | ✔ |
| **OTHER INFORMATION** | | | | | | |
| Weight | 189g | 0.6kg | 2.5kg | 620g | 34kg (including speakers) | 2.56kg |
| Dimensions (w x d x h mm) | 94 x 29 x 75 | 74 x 30 x 188 | 425 x 286 x 38 | 271 x 44 x 221 | 434 x 371 x 97 | 430 x 292 x 41 |
| **SCORES** | | | | | | |
| Features | ★★☆☆☆ | ★★★☆☆ | ★★★★★ | ★★★☆☆ | ★★★★★ | ★★★★☆ |
| Performance | ★★★☆☆ | ★★★★☆ | ★★☆☆☆ | ★★★★☆ | ★★★★☆ | ★★★★★ |
| Value for money | ★★★☆☆ | ★★★☆☆ | ★★★☆☆ | ★★★★★ | ★★★★☆ | ★★★★☆ |
| Overall | ★★★☆☆ | ★★★★☆ | ★★★☆☆ | ★★★★☆ | ★★★★☆ | ★★★★☆ |

# Editor's Choice

The idea of a device that can transmit music and movies from your PC to your TV and hifi is very attractive. Last year several companies whet our appetites with devices that promised this, but their performance was impeded mostly by the state of wireless network technology.

Today, high-speed wireless networks are both affordable and commonplace. The advent of the 802.11g standard (in theory at least) means the problems encountered by early adopters of digital streaming devices are now far less prevalent.

Unfortunately, as seen throughout this group test, theory and reality aren't always one and the same. Most of our submissions are capable of a maximum throughput of 54Mbits/sec, which is plenty of bandwidth for streaming good-quality video around the home. Unfortunately not all of them coped.

They were all prone to network interference from other devices, which at times, drastically affected performance. If your neighbour decides to use the microwave, or someone has a mobile phone conversation with a wireless Bluetooth headset, you can pretty much kiss goodbye to seamless media streaming.

The second and arguably most prevalent issue is ease of use. We were disappointed that manufacturers have made little progress in providing these devices with a straightforward configuration process.

**'The Streamium sets the standards by which similar devices are judged'**

In our opinion, users with no network configuration experience don't have a hope of rectifying some of the problems we had during tests. Users with patience and prior experience will succeed, but should be prepared for a lot of trial and error.

## The winners

Despite all this, the good news is that there are devices well worth considering. If you only want audio streaming, the first of our **Highly Commended** products, the **Netgear MP101**, is the perfect choice. Don't be put off by the fact that it's an 11Mbits/sec 802.11b device, as it does its job well – after all, CD-quality audio only requires a bandwidth of 1-1.5Mbits/sec.

**Philips Streamium MX6000i**

**Netgear MP101**

**Pinnacle Showcenter 1000G**

In practice the MP101 worked very well, and we only had two gripes, one of which being the lack of digital audio output. The other is its lack of compatibility with DRM-protected music purchased from Napster and Itunes, and the bundled free trials of Listen.com's Rhapsody online music service and Radio AOL aren't valid for UK users.

Our second **Highly Commended** award goes to the **Pinnacle Showcenter 1000G**. It isn't the most physically attractive device on test (that honour goes to the D-Link DSM 320), but it should blend in with the rest of your audio-visual kit and has a good number of features.

We have reviewed the product in previous issues, but this is the first time we have examined it since Pinnacle included a wireless 802.11g adapter in the package. This makes the product even more attractive than its predecessors. During tests it performed admirably, with particularly smooth video streaming.

It was not without problems however. Despite being branded as a new product, our review sample of the Showcenter 1000G arrived with the same outdated firmware as seen on previous models. It automatically updated itself with the latest version, but only after we had struggled through the cumbersome process of configuring the wireless network settings. Once the new firmware was installed, the Showcenter became slightly more user friendly.

The overall winner and our **Editor's Choice** is the **Philips Streamium MX6000i**. It is by far the most expensive entry here, but for good reason. The package includes a five-disc CD/DVD disc changer and a 450w amplifier with six separate speakers.

As well as playing DVDs, the MX6000i can stream movies from your PC to your television. It is the only device in this group that includes a wireless adapter for your PC. This is a great benefit for newcomers to the technology, but for those who have an existing wireless network, it's of dubious value and increases the cost of the package.

We were slightly disappointed at the MX6000i's lack of compatibility with wma/wmv audio and video. If your multimedia collection includes a large number of these files, you'll need to convert them to a format that it can understand.

On the whole, the MX6000i is a versatile and user-friendly device. If you're considering updating your entire audio-visual installation, it sets the standards by which similar devices are judged.



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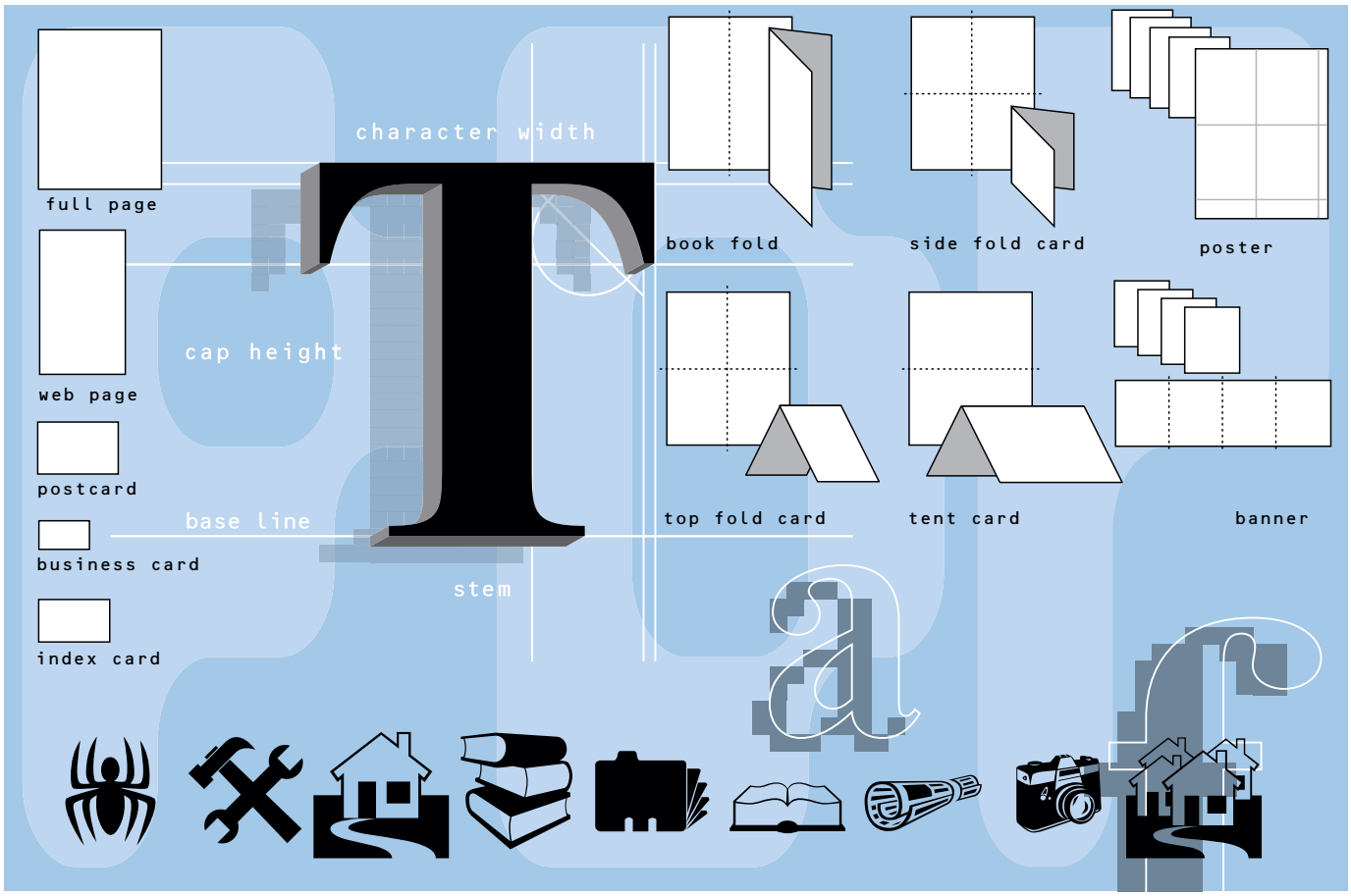


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# Get smart with DTP

**WORDS:** CLIFF JOSEPH

**Producing professional-looking documents is easy to achieve with the right DTP software and it can cost less than £100. Here are five packages to help you create simple, yet stylish results**

Someone at Adobe once said 'all companies are publishing companies' – meaning all companies, large and small, need to produce professional-looking documents and sales materials in order to attract business.

Admittedly, he was probably trying to flog some software at the time, but he had a point. However, professional-level desktop publishing (DTP) software such as Adobe's Indesign is only suitable for professional designers trained in the art of page layout.

Ordinary business users just don't have the time or the skill to master programs such as Indesign or its arch-rival, Quark Xpress. And, of course, these programs are far too expensive for home users who just want to produce newsletters or greetings cards on their low-cost home printer.

So, for the rest of us, there's a second category of DTP software that is less expensive and much easier to use, and these are the packages we are testing here. These programs typically cost less than £100, although Microsoft's Publisher 2003 pushes its luck a bit by charging £130, without a manual.

All these programs start by assuming you need a bit of help, so they provide a wide range of templates suitable for both home and business users. The real differences only become noticeable when you start to modify and edit them – it's not enough just to include 500 templates and a stack of clip art. What you really need is a program that provides both templates and versatile editing tools.



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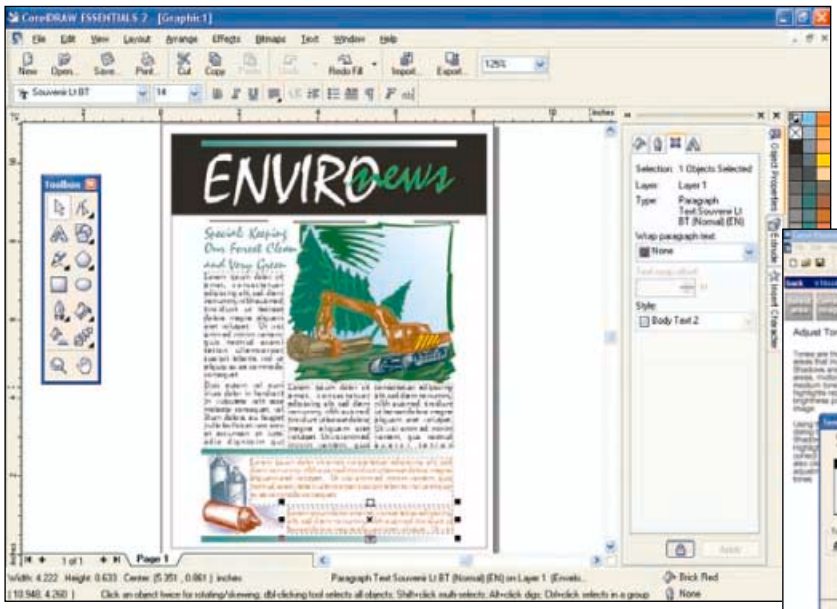
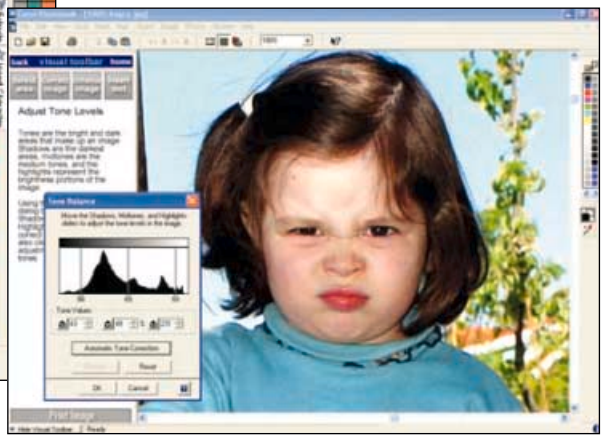



Left: Essentials is primarily a suite of graphics software, but it also includes templates for page layout work

Below: Photobook is an easy-to-use photo-editing program that gives you all the basics



# Coreldraw Essentials 2

Coreldraw Essentials is the odd man out in this group. Rather than being a 'pure' DTP program, Essentials is primarily a suite of graphics tools that also provides some page layout features.

The core of the suite is the Essentials program itself, which is a cut-down version of the more expensive Coreldraw illustration program. As you might expect, Essentials mainly concentrates on providing drawing and graphics tools. However, it does include more than 200 templates that can be used to create documents such as labels, greeting cards and calendars.

Essentials' drawing tools are very powerful, and make it easy to create your own illustrations and logos. In addition to creating standard geometric shapes such as rectangles, spirals and polygons, Essentials also has some powerful interactive drawing tools that make it easy to modify these basic shapes. You can draw two completely different shapes and then use the blend tool to merge them together, while the distortion tool allows you to click on any graphic object and distort it in any way you want.

There are also some impressive artistic drawing tools that mimic natural media such as chalk and paint brushes. You'd normally only find features like this in expensive painting programs, so their inclusion here represents excellent value for money.

While Essentials is primarily a vector drawing program, it includes a wide range of special effects filters that can be applied to photos. This will be handy for anyone who wants to create posters or adverts that contain product pictures. There are some good 3D perspective effects, and photo-editing filters such as blur and sharpen, so you can quickly import photos into your documents and tidy them up.

There are also some good creative effects that you can apply to your photos. You can put a frame around a photo or apply a series of artistic styles that make photos look like hand-drawn sketches or paintings. Again, these are features that you would normally only find in dedicated photo-editing programs. As a finishing touch, Corel includes a huge clip art library that takes up two additional CD-Roms.

Essentials' text formatting tools are also extensive, with precise controls for adjusting line spacing and creating documents with multi-column text. It's easy to create text that flows along a hand-drawn path, so you can do anything you want with headlines and logos. These text controls will be useful for creating posters or packaging materials, and Essentials is probably the most versatile program here when it comes to the creative manipulation of text and graphics, but it's a shame there's no option for saving your text styles as style sheets as this would speed up the creation of longer documents.

But that's Essentials' main weakness. The program does allow you to create documents containing multiple pages, and there are useful printing options for printing small booklets and folding cards. However, most of its layout features are geared towards creating single-page or short documents. A look at its selection of templates confirms this, as they tend to focus on single-page documents such as letters, cards and posters.

People who regularly need to produce long newsletters or reports will be better off looking at one of Essentials' more business-oriented rivals, such as Microsoft Publisher or Serif's Pageplus.

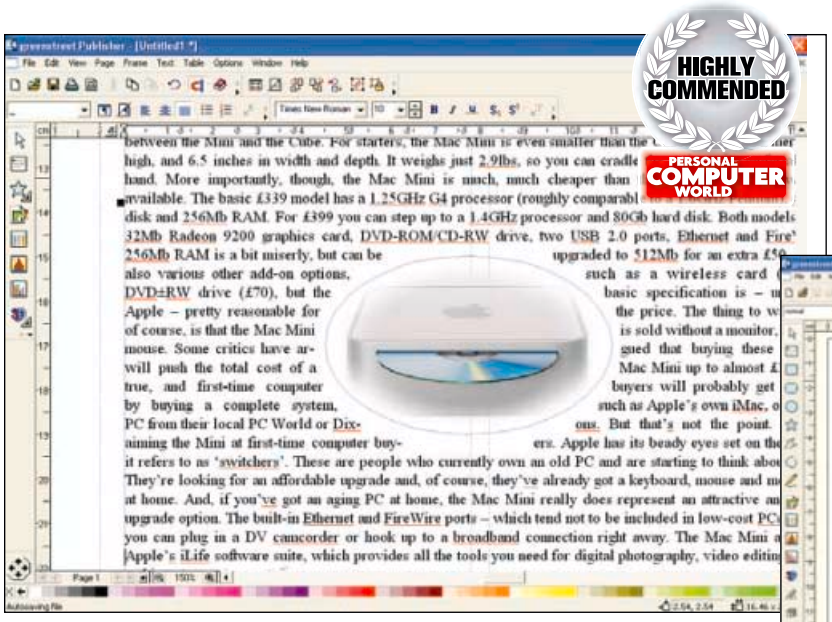
In addition to Essentials, the suite includes an easy-to-use photo-editing program called Photobook, and a photo-organiser called Photoalbum. Photobook is certainly no rival for a specialised photo-editor such as Photoshop Elements, but it provides all the basic tools you need for correcting colour and exposure problems in digital photos.

The combination of these three programs provides a good all-round graphics suite, and Essentials is versatile enough to be used for page layout work. However, the emphasis is very much on artistic creativity rather than producing business documents, and Essentials is most suitable for projects such as posters and packaging where you might really want to go to town with exotic text and graphic effects.

## DETAILS

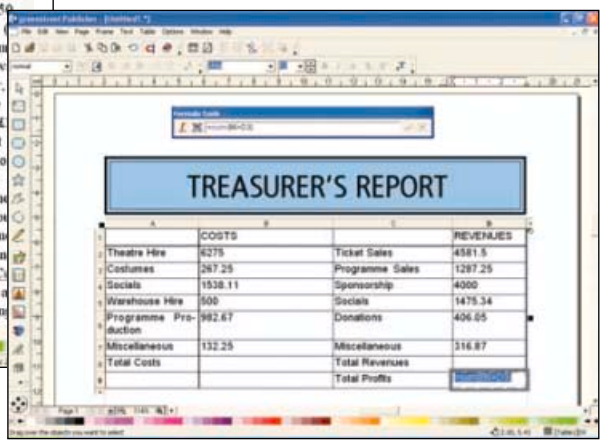
**RRP** £57.12 (£48 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION** Corel 0800 376 9271 **www.corel.co.uk**
**SYSTEM REQUIREMENTS**
200MHz processor • Windows 2000 or XP • 128MB of Ram • 160MB hard disk
**PROS** Good all-round drawing and photo-editing tools
**CONS** Page layout features are mainly suited to shorter documents
**VERDICT**
**Well priced, but is a graphics suite not a true DTP program**

| | |
|---|---|
| FEATURES | ★★★☆☆ |
| EASE OF USE | ★★★☆☆ |
| VALUE FOR MONEY | ★★★★☆ |
| OVERALL | ★★★☆☆ |




Left: Publisher 4 Gold provides versatile layout tools, including irregularly shaped picture boxes, text wrap, and transparency effects

Below: As well as creating tables, Publisher 4 Gold provides spreadsheet functions and the ability to create graphs and charts




# Greenstreet Publisher 4 Gold

At just under £50, Greenstreet's Publisher 4 Gold Edition is less than half the price of Microsoft Publisher 2003. Even so, there are many similarities between the two, and Publisher 4 Gold can give its more expensive rivals a real run for their money.

Greenstreet describes itself as a specialist in 'family-friendly software', and Publisher 4 Gold does show a bias towards home users. Many of the program's templates are geared towards documents such as greeting cards, calendars and party invitations. Even so, there are plenty of templates for business documents as well and you can even create expense forms in several European languages.

Like most of the DTP programs reviewed here, Publisher 4 Gold has a mail-merge option that can be used to produce mailshots. However, it lacks Microsoft Publisher's ability to generate catalogues by drawing product information from external data sources. This means Publisher 4 Gold is probably more suitable for small businesses, than larger corporate users.

When you launch the program, a small dialogue box asks if you want to view a tutorial, select a template or create your own designs by working with a blank page. If you select a template, a Document Wizard opens up and guides you through steps such as selecting a colour scheme and a suitable set of typefaces. The various colour schemes and typefaces are organised into themes, such as Christmas, so it's easy to find something that suits the style of your document. The preview display gives you both an overview of the entire page layout and a close-up look at the typefaces you've selected.

Once that's done you just hit the Finish button to enter the main workspace, where you can modify the template and add your own text and graphics.

We were pleased to see Greenstreet has made the effort to include a good printed manual, so it's easy to start experimenting and figure out how the various layout tools work.

The toolbar on the left-hand edge of the screen contains a number of options for adding text and graphic elements to your page. Like most DTP programs, Publisher 4 Gold allows you to draw boxes onto the page in order to create your layout. There are two types of boxes available. The first is a standard rectangular one that can be used to store text. The second can contain either text or graphics. This is a little confusing at first, until you realise that the second type of box is much more versatile than the first.

These boxes can be various shapes, such as circles and stars, and you can even draw completely irregular boxes by hand. Once you've drawn one of these boxes you can then import text or graphics into it, and the box will act like a frame, making the text or graphics conform to the shape of the box.

You can also apply some effects to these boxes. You can modify the way that text flows around the box or apply a transparency or background tint to the box, so you've got plenty of freedom to fine-tune your layout.

Oddly, given this versatility, the program's drawing tools are fairly basic. There's an option for creating 3D text and some basic photo-editing tools, but you can't draw simple shapes such as arrow-heads or parallelograms. Annoyingly, there is a Draw tool in the toolbar, but clicking on this simply displays an advert for a separate program from Greenstreet.

To make up for that crass marketing ploy, Greenstreet does include a number of other useful features. There are good tools for drawing tables, and the program provides basic spreadsheet features so that you can perform calculations within your tables. There are also some good features for drawing various types of graphs and charts, and you can even create and print barcodes by entering product data by hand or importing it from a database.

It may have a few rough edges, but they are easy to forgive at this price, and Publisher 4 Gold is a good DTP program for any home or small-business user on a tight budget.

## DETAILS

**RRP** £49.99 (£42.54 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Greenstreet 01480 496 189
**www.greenstreetsoftware.com**
**SYSTEM REQUIREMENTS**
200MHz processor • Windows 95 or later • 128MB of Ram • 190MB hard disk
**PROS** Low cost; layout tools
**CONS** Limited drawing tools, and unclear preview of templates
**VERDICT**
**Good value, but more suited to home or small businesses**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **EASE OF USE** | ★★★☆☆ |
| **VALUE FOR MONEY** | ★★★★★ |
| **OVERALL** | ★★★★☆ |



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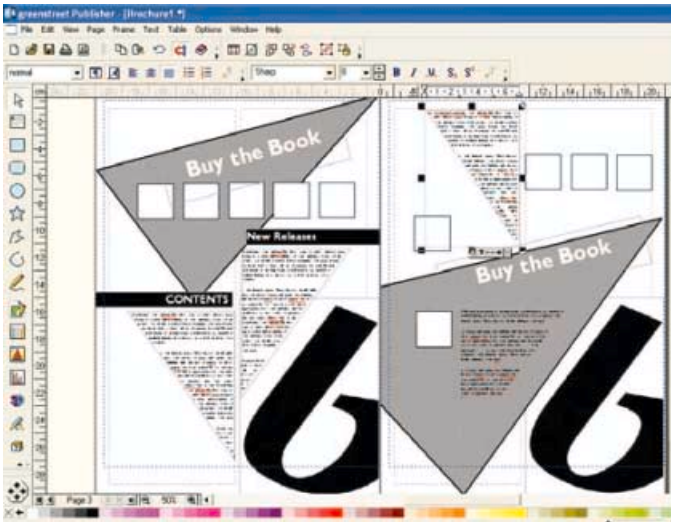



Despite its low cost, Power Publisher 2 has some powerful and flexible layout tools, such as creating a multitude of different shaped boxes

# GSP Power Publisher 2

This one needs a little explanation. When you install Power Publisher you see a message saying that it was developed in association with Greenstreet Software – which is the developer of Publisher 4 Gold, also included in this group test. Not surprisingly, then, the two products are very similar. However, there are enough differences to make it worth looking at them separately.

Unfortunately, the first big difference we noticed was Power Publisher's buggy installer program. The first time we ran it, it offered to install the now ancient Acrobat Reader 4. We said no – at which point the installer crashed. A second attempt threw up an error message, which we ignored, and we eventually managed to get the program running.

Power Publisher includes the same basic set of templates as Publisher 4 Gold, covering business cards and forms, newsletters, calendars and simple web pages. There's a similar 'wizard' that allows you to select different colour schemes for each template. Sadly, another bug appeared here causing the list of typefaces to be displayed incorrectly in the wizard's Preview window, making it difficult to change the typefaces on templates.

The program's other layout and editing tools work well, though. You can create text and picture boxes in a variety of shapes, and even draw irregular boxes using a freehand pen. This gives you freedom to experiment.

There's even one area where Power Publisher goes a step further than Publisher 4 Gold. Clicking the drawing tool in Publisher 4 Gold throws up an advert, but Power Publisher is accompanied by a standalone drawing program that provides a good variety of drawing tools. If it weren't so buggy, that would give Power Publisher the edge over Publisher 4 Gold. However, the bugs we encountered make it difficult to recommend Power Publisher, and we can't help thinking it could use an update.

**DETAILS**

**RRP** £49.99 (£42.54 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
GSP **www.gsp.cc**
**SYSTEM REQUIREMENTS**
Windows 98 or higher • 166MHz processor • 16MB of Ram • 170MB disk space
**PROS** Inexpensive; layout and tools
**CONS** Some worrying bugs
**VERDICT**
**It's well priced, but those bugs give the impression of a program that's been neglected**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **EASE OF USE** | ★★☆☆☆ |
| **VALUE FOR MONEY** | ★★★☆☆ |
| **OVERALL** | ★★★☆☆ |

## DTP for free

**The DTP programs reviewed here may be easy to use, but DTP software is actually incredibly complicated. A good DTP program combines sophisticated typographical controls, powerful graphics tools, options for creating tables and charts and even photo-editing capabilities.**

**Not surprisingly, then, there's not a huge amount of shareware or freeware DTP software floating about on the Internet. Even the normally prolific open-source movement seems to steer clear of DTP software.**

**The best thing we've come across in the open-source world is Kword, which is part of the Koffice suite of business applications (www.koffice.org).**

**This is a powerful word processor, which also allows you to create page layouts by placing frames onto the page and then just squirting text into those frames. It's good for creating long, text-heavy documents, such as technical manuals, but it lacks the graphical versatility that you might need for posters or adverts.**

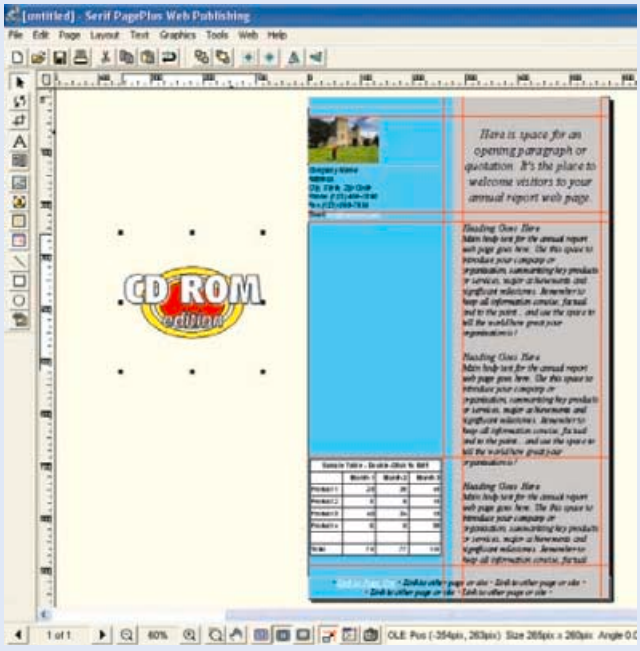
**If it's versatility you're after, you might want to take a look at Ragtime Solo. Ragtime is a little-known integrated software program produced in Germany (www.ragtime-online.com). The full version of Ragtime costs almost £500 (which is probably why it remains little known), but Ragtime Solo is a cut-down version that you can download for free.**

**Like the old Microsoft Works Suite, Ragtime Solo is an integrated suite that combines word processing, graphics and spreadsheet features all within a single program. Like ordinary DTP programs, Ragtime Solo allows you to create layouts by drawing boxes onto the page, and you can then insert text, graphics or spreadsheet data into each box.**

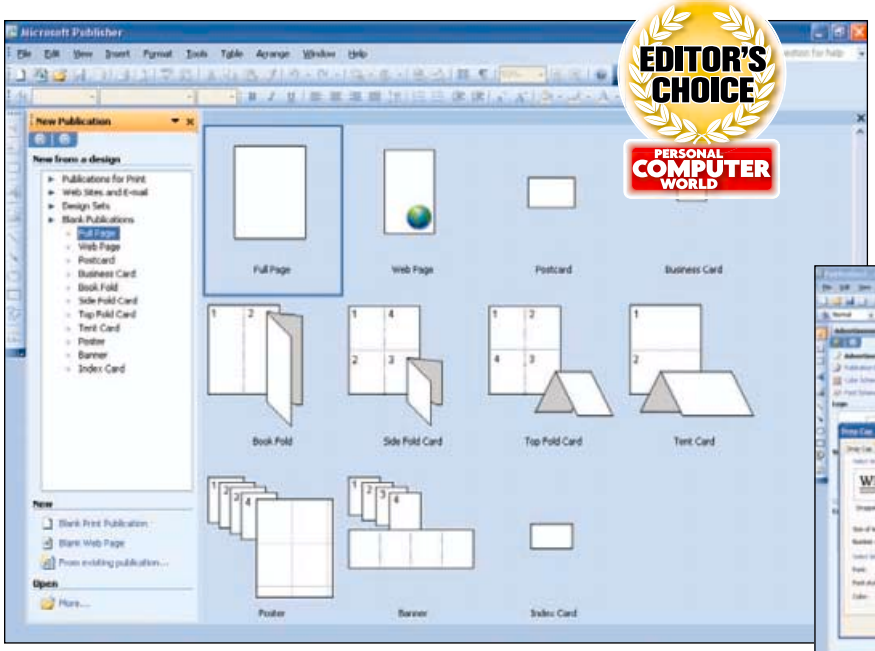
**It takes a little getting used to, but the program is extremely versatile, and allows you to perform bizarre tasks such as creating a circular spreadsheet with text flowing around it.**

**But, for newcomers to DTP, the best freebie is on a site called www.freeserifsoftware.com, where Serif Software gives away the old Pageplus SE for free.**

**This is a bit too basic for most business users, but it's fine for creating posters and greeting cards, so it's a worthwhile download for home users who don't want to spend any money on a DTP software package.**

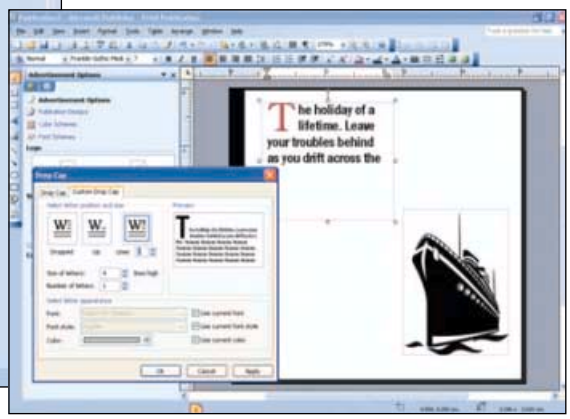



Pageplus 10 costs £99.99 but you can download the old Pageplus SE for free and it's useful for those who want to create greeting cards and so on




Left: Publisher 2003 has hundreds of templates for different types of documents, suitable for both home and business users

Below: Time-saving features include the ability to create a variety of drop cap styles



# Microsoft Publisher 2003

Microsoft describes Publisher 2003 as a tool for 'business publishing and marketing materials'. That's true enough, but it's not the whole story.

Admittedly, Publisher does put a lot of emphasis on creating business documents such as adverts, brochures, business cards and forms. The ability to import both text and graphics from external databases and spreadsheets will also appeal to business users who need to quickly produce mail-shots and catalogues. However, a closer look reveals that home users are also well catered for, with plenty of options for creating greeting cards and other non-business documents.

The program gets off to a rocky start though. Microsoft's product activation process is always annoying, but we were more concerned by the lack of a printed manual. Desktop publishing software is complicated stuff, containing a range of text-editing, layout and graphics tools and a printed manual really is a basic requirement. The on-screen help files are fairly comprehensive, but they're no substitute for a proper manual with tutorials you can read at your own pace.

Fortunately, Microsoft has done a good job at making Publisher easy to use, so it's not too difficult to dip into the program and explore its many features. When you launch the program you are presented with a blank workspace that has the word Start printed in large letters, and an arrow pointing at the Task Pane on the left-hand side of the screen. The Task Pane is a central feature of Publisher, and provides quick access to many of its main features.

Initially, the Task Pane displays a list of New Publications. These are templates you can use to create a wide range of documents. There are hundreds of templates for printing envelopes, letterheads, postcards and other types of documents.

When you select a template, the Task Pane switches into Design mode and displays a series of additional options, such as typefaces and colour schemes suitable for each type of template. One useful touch is the ability to alter the actual layout of templates, perhaps switching from two columns of text on the page to three columns with the click of a button.

The Task Pane also includes a pull down menu with a number of additional options. The Background command allows you to instantly add a background tint or image to your pages, and there's a clever Design Checker that assesses your page layouts and points out possible problems, such as text that doesn't fit onto the page properly.

You're also free to modify these templates or simply to start from scratch with a completely blank page. The small toolbar on the left-hand edge of the screen allows you to draw text boxes and picture boxes straight onto the page, so you can quickly create a layout by hand and then import your text and graphics whenever you're ready. Publisher isn't quite as versatile as Publisher 4 Gold or Pageplus when it comes to creating irregularly shaped text and graphics boxes, but the business users it's aimed at probably won't be too worried about that.

Text editing and formatting is a strong point, though. As well as the usual spelling check and thesaurus, the program has a research option that can connect to Microsoft's online Encarta encyclopaedia to help you check facts or technical details. The text-formatting features are also quite comprehensive, with style sheets for controlling paragraph formatting and accurate tracking and kerning controls to alter the spacing of individual words and characters. The program doesn't provide much in the way of photo-editing tools, but there's a good set of vector drawing tools and 3D text effects.

There's no doubt that Publisher 2003 is a powerful and versatile desktop publishing program and its ability to handle spreadsheet and database files makes it clearly the best option for business users. However, the poor documentation is just plain annoying – especially given that this is the most expensive package reviewed here.

## DETAILS

**RRP** £130.87 (£111.38 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Microsoft 0870 6010 100
**office.microsoft.com/publisher**
**SYSTEM REQUIREMENTS**
Windows XP or 2000 • 233MHz processor • 256MB of Ram • 250MB disk space
**PROS** Versatile
**CONS** Poor documentation
**VERDICT**
**A good all-round DTP program, suitable for business users**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **EASE OF USE** | ★★★★☆ |
| **VALUE FOR MONEY** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |



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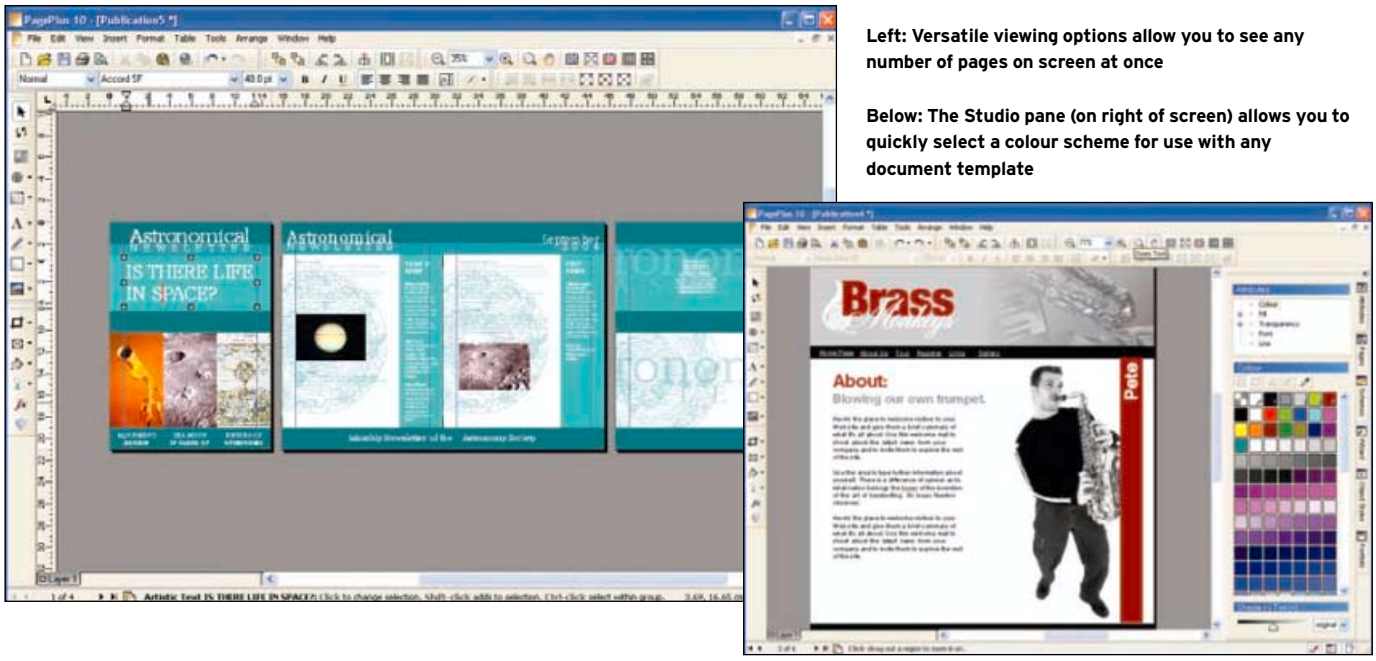


**Left: Versatile viewing options allow you to see any number of pages on screen at once**

**Below: The Studio pane (on right of screen) allows you to quickly select a colour scheme for use with any document template**

# Serif Pageplus 10

At first glance, Serif's Pageplus seems to have the same basic layout and editing features as most of its rivals. However, a closer look reveals that the program often goes one step further and provides a little extra depth and power in many of its features.

The program starts in the usual manner, by allowing you to select a ready-made template for your document or to create a new design on a blank page. There's a second CD-Rom with Pageplus that includes around 1,000 templates for both home and business use, including business cards and forms, newsletters and web pages.

There's not much in the way of clip art, but that second CD includes 200 additional typefaces, which are probably a lot more useful than a collection of cheap clipart.

Pageplus displays the template you select in its main workspace and displays a panel called the Studio on the right-hand side of the screen. The Studio includes a series of tabs that allow you to switch between several sets of tools. You can choose different colour schemes and options such as background tints. Unfortunately, unlike rivals such as Microsoft Publisher, Pageplus doesn't allow you to easily alter the typeface scheme used for each template. You therefore have to alter each typeface manually, which is a chore.

However, there are other areas where Pageplus clearly outdoes its rivals. Most of these DTP programs only provide basic photo-editing controls, but Pageplus includes a wide range of special effects, including shadow and glow effects and a 3D lighting tool that allows you to cast light onto an object from any angle.

Other options include the mesh warp, which allows you to distort the shape of any text or graphics objects, and some versatile transparency controls that let you to create good visual effects. Even basic features such as the Crop tool get an extra twist, such as the ability to crop pictures into irregular shapes.

Serif has even beefed up the standard Copy and Paste and Search and Replace commands. You can copy effects from one object and paste them straight onto another, or use the Search and Replace command to locate text that uses a particular typeface and switch it to a different one with alternative line spacing and other formatting options.

If you want to modify a template or create your own designs you can use the two box tools to draw text and graphics boxes straight onto the page. You can either create ordinary rectangular boxes or choose from a number of irregularly shaped frames.

Pageplus doesn't allow you to draw frames and boxes by hand, as Publisher 4 Gold does, but it still provides plenty of scope for experimenting with your layouts.

As you start to experiment, you'll find lots of neat little touches. We like the ability to automatically insert placeholder text into any box, as this makes it easier to visualise the final layout. There's even a proof reading option that can read through your document and point out any stylistic errors.

There are one or two odd little omissions, though. The program can connect to external spreadsheets and databases to perform complex tasks such as mail-merge, but it can't directly import spreadsheet files in order to create simple tables. The only way to do this is to copy and paste the data and then tidy it all up yourself.

We also found that the program's interface sometimes creaks under the sheer weight of features crammed into it. Some features, such as the various graphics effects, are split between the main toolbar, the Studio and various pull down menus, so it's sometimes hard to know where to look for a particular feature.

Pageplus probably has the widest range of layout and graphics tools here, but minor weaknesses make it a little less easy to use than more polished programs such as Microsoft Publisher.

Even so, at £99.99 it's cheaper than Microsoft Publisher and is well worth considering, especially if you're happy to abandon the templates and experiment with your own customised designs.

## DETAILS

**RRP** £99.99 (£85.10 ex VAT)
**BEST PRICE**
**www.pcw.co.uk/bestprices**
**PRODUCT INFORMATION**
Serif Europe 0115 914 2000
**www.serif.com**
**SYSTEM REQUIREMENTS**
200MHz processor • Windows 98 or later • 128MB of Ram • 240MB hard disk
**PROS** Versatile layout and tools
**CONS** Typeface alterations
**VERDICT**
**Pageplus has real depth and power, marred only by a few rough edges and omissions**

| | |
|---|---|
| FEATURES | ★★★★☆ |
| EASE OF USE | ★★★☆☆ |
| VALUE FOR MONEY | ★★★★☆ |
| OVERALL | ★★★★☆ |

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- Integrated high quality 6-channel audio
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- 10 USB 2.0 ports + 2 1394a ports for high-speed connectivity
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- COMPUTER SHOPPER, APRIL 2005

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- 10 USB 2.0 Ports for high-speed connectivity
- Supports 4 SATA and RAID 0, 1, 0+1

### nFORCE4-A754

- Supports Socket 754 Athlon 64/Sempron with HT technology
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- Built-in Dual LAN with Gigabit and 10/100 LAN
- Integrated high quality 6-channel audio
- 1 PCI Express x16 + 2 PCI Express x1 + 3 PCI
- 10 USB 2.0 ports for high-speed connectivity
- Supports 4 SATA and RAID 0, 1, 0+1


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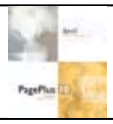
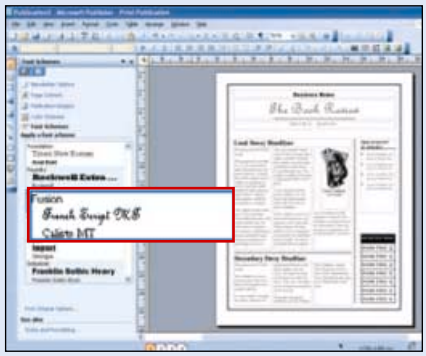
## Table of features

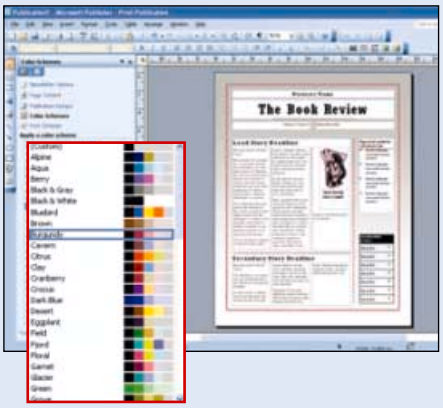
For the best DTP software prices go to www.pcw.co.uk/bestprices

| | | | | |  |
|---|---|---|---|---|---|
| **MANUFACTURER** | **COREL** | **GREENSTREET** | **GSP** | **MICROSOFT** | **SERIF** |
| **PROGRAM** | **CORELDRAW ESSENTIALS 2** | **PUBLISHER 4 GOLD EDITION** | **POWER PUBLISHER 2** | **PUBLISHER 2003** | **PAGEPLUS 10** |
| Price inc VAT (ex VAT) | £57.12 (£48) | £49.99 (£42.54) | £49.99 (£42.54) | £130.87 (£111.38) | £99.99 (£85.10) |
| Telephone | 0800 376 9271 | 01480 496 189 | No sales phone number | 0870 6010 100 | 0115 914 2000 |
| URL | www.corel.co.uk | www.greenstreetsoftware.com | www.gsp.cc | office.microsoft.com/publisher | www.serif.com |
| **FILE FORMATS** | | | | | |
| File import | cdr (Coreldraw), doc, txt, rtf, psd, jpg, tif, bmp, xls, HTML | doc, txt, rtf, psd, jpg, tif, bmp | doc, txt, rtf, psd, jpg, tif, bmp | doc, txt, rtf, HTML, psd, jpg, tif, bmp, xls, | doc, txt, rtf, psd,jpg,tif, bmp |
| File export | cdr (Coreldraw), doc, txt, rtf, psd, jpg, tif, bmp, HTML | dtp (Publisher 4), txt, rtf, HTML | dtp (Publisher 4), txt, rtf, HTML | pub (Publisher 2003), txt, HTML | ppp (Pageplus), jpg, tif, bmp, HTML |
| **LAYOUT/TEXT TOOLS** | | | | | |
| Document templates | 250 | 300 | 300 | 400 | 1,000 |
| Web page templates | ✗ | ✓ | ✓ | ✓ | ✓ |
| Create text/picture boxes | ✓/✓ | ✓/✓ | ✓/✓ | ✓/✓ | ✓/✓ |
| Text autoflow | ✓ | ✓ | ✓ | ✓ | ✓ |
| Create tables | ✗ | ✓ | ✓ | ✓ | ✓ |
| Import tables/ spreadsheets | Imports xls files | ✓ | ✓ | ✓ | ✗ |
| Add headers/footers | ✗ | ✓ | ✓ | ✓ | ✓ |
| Resize imported pictures | ✗ | ✓ | ✓ | ✓ | ✓ |
| Rotate pictures/text boxes | ✓/✓ | ✓/✓ | ✓/✓ | ✓/✓ | ✓/✓ |
| Adjust tracking/kerning | ✗/✓ | ✓/✓ | ✓/✓ | ✓/✓ | ✓/✓ |
| Adjust line spacing | ✓ | ✓ | ✓ | ✓ | ✓ |
| Automatic text wrap | ✓ | ✓ | ✓ | ✓ | ✓ |
| Create drop caps | ✓ | ✓ | ✓ | ✓ | ✓ |
| Create style sheets | ✗ | ✓ | ✓ | ✓ | ✓ |
| Import text files | ✓ | ✓ | ✓ | ✓ | ✓ |
| Spelling checker | ✓ | ✓ | ✓ | ✓ | ✓ |
| Search and replace | ✓ | ✓ | ✓ | ✓ | ✓ |
| **VIEWING OPTIONS** | | | | | |
| View single pages | ✓ | ✓ | ✓ | ✓ | ✓ |
| View two-page spread | ✗ | ✓ | ✓ | ✓ | ✓ |
| View multiple pages | ✗ | ✓ | ✓ | ✗ | ✓ |
| Zoom levels | 1-400,000 per cent | 12-1,200 per cent | 12-200 per cent | 10-800 per cent | 1-5,000 per cent |
| View rulers | ✓ | ✓ | ✓ | ✓ | ✓ |
| View grid guides | ✓ | ✓ | ✓ | ✓ | ✓ |
| Snap objects to rulers/grids | ✓ | ✓ | ✓ | ✓ | ✓ |
| **ADDITIONAL FEATURES** | | | | | |
| Printed manual | ✓ | ✓ | ✓ | ✗ | ✓ |
| Online help/tutorials | ✓ | ✓ | ✓ | Requires Internet access | ✓ |
| Mail-merge | ✗ | ✓ | ✓ | ✓ | ✓ |
| Draw lines and borders | ✓ | ✓ | ✓ | ✓ | ✓ |
| Draw shapes | ✓ | ✗ | ✓ | ✓ | ✓ |
| Includes clip-art library | ✓ | ✓ | ✓ | ✓ | ✓ |
| Photo-editing tools | Bundled Photobook editing program | Brightness, contrast, crop, colour balance, focus | Brightness, contrast, crop, colour balance, focus | Brightness, contrast, crop | Brightness, contrast, crop, tints, glows, shadows, bevel, emboss |
| Print colour separations | ✓ | ✓ | ✓ | ✓ | ✓ |
| Convert documents to pdf | ✓ | ✓ | ✗ | ✗ | ✓ |
| Trial version available | ✗ | ✗ | ✗ | ✓ | ✗ |
| **SCORES** | | | | | |
| Features | ★★★☆☆ | ★★★★☆ | ★★★★☆ | ★★★★☆ | ★★★★☆ |
| Ease of use | ★★★☆☆ | ★★★☆☆ | ★★☆☆☆ | ★★★★☆ | ★★★☆☆ |
| Value for money | ★★★★☆ | ★★★★★ | ★★★☆☆ | ★★★★☆ | ★★★★☆ |
| Overall | ★★★☆☆ | ★★★★☆ | ★★★☆☆ | ★★★★☆ | ★★★★☆ |

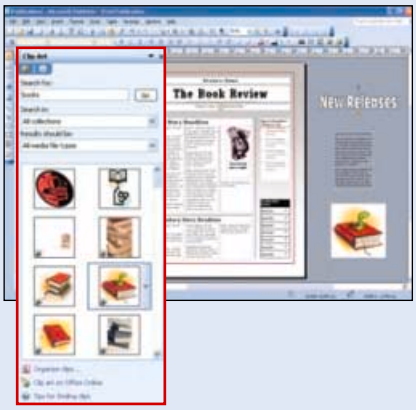
## Getting started with DTP



**1** Most low-cost DTP programs take the same basic approach to creating documents. You start by selecting a template, such as this newsletter from Microsoft Publisher. The next step is to select a typeface scheme. This will consist of a set of typefaces for elements such as headlines, main text and captions. The preview display will update automatically so you can see how Your choices affect the appearance of the document.



**2** If you've got a colour printer then you'll want to experiment with different colour schemes as well. This is where things can go horribly wrong and you could end up with something that looks really ghastly. Remember to make a note of the name of the original colour scheme so that you can go back to it if you need to. A good DTP program will also allow you to add features such as a background image or tint.



**3** You'll probably want to modify the template at some point or even create your own layouts using a blank page. To do this, you draw boxes (also known as frames) onto the page and then place text and graphics inside each box. The area beside the page is known as the pasteboard. You can use the pasteboard to store odd bits of text and graphics while you experiment with the page layout.

# Editor's Choice

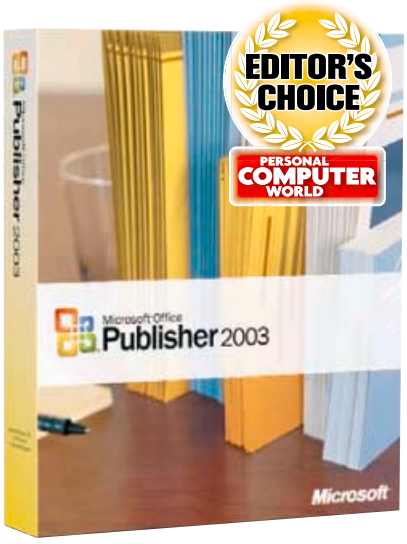
All these desktop publishing programs take the same basic approach to designing documents, allowing you to select a template and to then modify it by placing your own text and graphics boxes onto the page.

Yet, despite this common approach, it's easy to notice some major differences. Corel's Essentials provides a powerful combination of text and graphics tools, but its emphasis is very much on short – primarily single-page – documents such as posters and adverts, rather than longer newsletters and reports. That will limit its appeal to business users.

Power Publisher 2 disappointed us with its clumsy installer and a problem in its Preview mode that limits your freedom to experiment with the typeface scheme within a template. Even more surprising was the fact that Serif's otherwise impressive Pageplus has a similar limitation. It's got some very powerful graphics tools and it does allow you to alter the colour scheme on a template easily enough. Unfortunately, there's no option for quickly changing the entire typeface scheme within a template.

**Greenstreet Publisher 4 Gold** is essentially a bug-free and more up-to-date version of Power Publisher and, at just £49.99, represents very good value for money. Its templates aren't quite as slick and professional as those of Microsoft Publisher, so it's probably more suited to home users than business users. Even so, its combination of low cost and versatile layout tools means that it deserves to be **Highly Commended**.

**'The most expensive product also happens to be the best'**




Microsoft Publisher 2003

Microsoft Publisher 2003 is more than twice the price of Publisher 4 Gold, but it's also the program that best manages to cater to the needs of both home and business users.

Its great strength is the ability to quickly make major changes to any of its templates. You can change not just the colour and typeface scheme within a template, but also the layout of the template itself, instantly switching from, say, a single column of text to a newspaper-style layout that has multiple columns of text on the page. It has the best tools for importing data from spreadsheets and databases, making it clearly the best choice for business users.

The price may deter home users, and the lack of a printed manual is very lazy. However, this is one occasion where the most expensive product also happens to be the best, and **Microsoft Publisher 2003** emerges as the clear winner of our **Editor's Choice** award.



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**Panda Antivirus Software is available at:**

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dabs.com www.dabs.com

IdealInnovations.co.uk www.idealinnovations.co.uk

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my style inside

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- Superscalar 16 pipelines VPU with PCI-Express x 16
- Memory Clock speed: 1000Mhz Engine Clock Speed: 500Mhz
- Videoshader™ HD seamless intergration of pixel shaders
- 256MB DDR3
- Video In/ TV Out
- Dual DVI Output

## RX700 Pro - TD256E

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- 256MB DDR3 Memory
- Video In/ TV Out
- Dual VGA (DVI/D-50B)
- PCI-Express x16
- Outstanding Games Bundle
- Memory Clock speed: 860Mhz Engine Clock Speed: 425Mhz
- Videoshader™ HD seamless intergration of pixel shaders

Where to buy

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| **3D Computers Systems** www.3dinhome.com | **Kotech** www.kotech.co.uk | **Overclockers** www.overclockers.co.uk | **RL Supplies** www.rlsupplies.co.uk | **THX Trade** www.thx-trade.com |
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# Network

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**Reviews**

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Netsupport Manager 9

**Group test**

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## IP future inevitable

The migration to converged networks with IP telephony will accelerate this year as more companies discover the cost savings and business efficiencies of running voice, data and video over a single infrastructure. Jerry Caron of Current Analysis said that firms' restrictions on spending over the past few years have created pent-up demand for infrastructure upgrades among European businesses.

## Security switches

Foundry Networks has launched its new SuperX range of Layer 2 and Layer 3 Gigabit/10 Gigabit Ethernet compact modular switches. The range comprises three models: Fastiron SuperX for the network edge and wiring closet; Turboiron SuperX for 10GbE aggregation and core markets and high-performance computing; and Bigiron SuperX, which has a 'beefier CPU' and is aimed at corporates and Layer 3 metropolitan Ethernet backbones.

## Wifi on the highway

Motorists with Wifi devices can now get web access at 43 Moto motorway service stations across Britain, thanks to Readytosurf hotspots installed by Broadreach. Access is also available through fixed terminals.

Payment options include pre-pay vouchers, credit card or subscription to roaming partners such as I-pass. Little Chef restaurants and Travelodge Hotels offer Readytosurf access.

# Chip duo boost power and flexibility

### PCI Express and virtulisation technologies built into new ranges

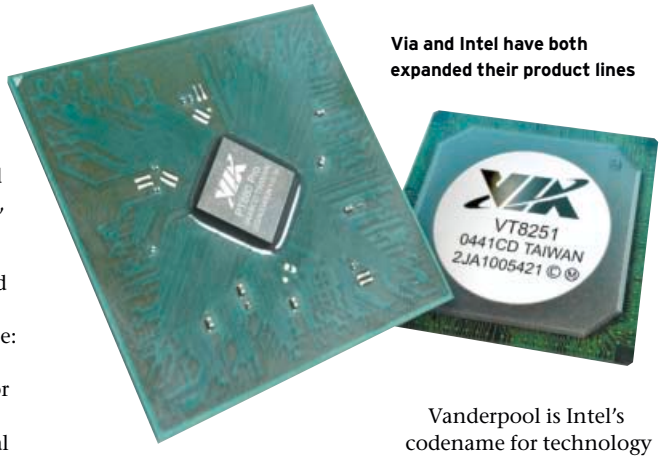
In a busy month on the chip front, both Intel and Via Technologies made announcements to strengthen their product lines.

Via introduced motherboard chipsets for Pentium 4 systems, designed to help a smooth transition to new technologies such as the PCI Express bus and DDR2 memory.

The PT series chipsets include: the PT880 Pro; the PT894, offering higher performance for mainstream systems; and the PT894 Pro, which supports dual PCI Express graphics cards and is aimed at workstations. All three chipsets are now shipping to motherboard makers and system integrators.

The PT880 Pro features Via's Universal Graphics Interface (UGI), which supports PCI Express and AGP graphics on the same motherboard, allowing firms to upgrade their systems and continue using AGP graphics or migrate to PCI Express at a pace that suits them.

The chipsets are designed to link to Via's VT8237 Southbridge chip, which features both parallel and Serial ATA (Sata) disk controllers and supports the older PCI slots. A forthcoming replacement for this chip, the VT8251, will support Sata II, Raid 5 disk arrays and high-definition audio.




**Via and Intel have both expanded their product lines**

Intel brought forward its plans to include hardware virtualisation support in its PC processors from 2006 to this year. It also released preliminary specifications for developers working on virtualisation tools.

Vanderpool is Intel's codename for technology that lets a processor run different operating systems at the same time, allowing a PC to be partitioned into multiple virtual systems carrying out various tasks.

Use of virtualisation tools has been growing in servers as it allows for greater flexibility when deploying applications.

But Intel did not say whether Vanderpool will be in its Smithfield chip, due out mid-year, or if it will be introduced in a further desktop chip.

**Daniel Robinson**

# Variable bandwidth service debuts

Companies with offices spread around the UK can now link them and control their bandwidth capacity with Telewest's Ethernet service.

Running at speeds of 10Mbits/sec to 1Gbit/sec, the service allows organisations to ramp up or reduce their bandwidth capacity as and when they need it, such as during peak periods.

'We can offer users, say, 10Mbits/sec, and then additional increments of 10Mbits/sec if they need it,' said Alison Adams, senior product manager at Telewest. 'What we normally do is build in excess capacity that we can turn on quickly for users if need be. If they went from 10Mbits/sec to 1Gbit/sec though, this might take a couple of days.'

Telewest said the new offering is a step up from its Evolved Ethernet service, which launched a year ago and is aimed at large enterprises wanting to consolidate existing bandwidth or replace end-of-life ATM or Frame Relay connections.

The company has 63 points of presence (PoPs) nationally, and will use rival networks, such as BT or NTL, where it has no PoPs near customers' sites. It also plans to launch a national, managed Voice over IP (VoIP) service with support for 'multimedia over IP', to which it will gradually move its Centrex customers.

Charges will be determined on a case-by-case basis in order to reflect customers' specific requirements and configurations.

**Dave Bailey**

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networks@pcw.co.uk

# Invest in SIP and reap the financial rewards

Alan Stevens explains why Voice over IP is becoming more attractive for home as well as business users

'You can be almost anywhere and still make and receive calls – as long as you can connect to the Internet'

Voice over IP (VoIP) appears, at long last, to have made the leap from an expensive corporate-only solution to something more affordable and interesting. This is due to the growing popularity of broadband, which provides the bandwidth and always-on connectivity required, and to the widespread adoption of Session Initiation Protocol (SIP), which makes the technology easier to use.

With SIP you 'dial' the address of the person you want to speak to. A SIP server, typically hosted by a specialist provider, will then deliver up the correct IP address, enabling the call to go ahead. Because registration is a dynamic process you can be almost anywhere and still be able to make and receive calls – as long as you can connect to the Internet.

SIP service providers also usually provide a gateway to the PSTN (Public Switched Telephone Network) and the mapping of ordinary phone numbers to SIP addresses, enabling VoIP users to make and receive calls from ordinary phone subscribers.

I currently have two SIP-enabled phones as well as my analogue handset. Both can be used to make and receive calls with my broadband ADSL connection using a SIP service provider – in this instance, Sipgate, although there are many others.

I've also been given a couple of PSTN phone numbers; one with a prefix matching my local exchange, the other a London number. Calls to these are directed via the SIP gateway hosted by Sipgate to my VoIP phones and, using the same gateway service, I can also make outgoing calls to PSTN subscribers.

And the cost? Well, nothing most of the time, with no line rental or monthly subscription charges, and no charge for setting up the Sipgate account or phone numbers. The service provider makes money from taking a small amount of what it costs to call each number (some use 0870/0845 numbers for this purpose), then billing me for outgoing calls to the PSTN made via its gateway.

But even then the rates aren't that high, with local and national UK calls, for example, costing just 1.19p/min and calls to the US 1.5p/min. Other providers charge similar rates with mobile-style calling plans available for heavy users and hosted switchboard solutions for business customers.

The fact that there's a growing band of SIP service providers offering this kind of deal is further helping spread the VoIP word, as is the availability of affordable SIP-compatible hardware/software. A decent handset or headset can be bought very cheaply now and there are custom IP phones available, along with specialised VoIP routers and adapters to enable ordinary analogue phones to be used.

Prices for a SIP adapter, which is typically a small box that sits between your router and your phone, have dropped considerably, costing from around £70-£80. This is a lot more than an ordinary new phone, but much less than renting an extra line. Plus you can make calls for next to nothing to the PSTN, or for free if you call another SIP phone directly over the Internet. Also, your location doesn't matter, so you can appear to be anywhere you want – the benefits of which are causing an increasing number of business and home users to look at what VoIP has to offer.

# Wyse offers flexibility with tailored terminals

Wyse Technology has two new Linux-based terminal devices on the market, and has stepped up its efforts to simplify its products, making them easier to tailor and use for specific tasks.

The Winterm 5150SE and Winterm S50 thin clients are based on Wyse Linux version 6. They are customisable and offer more flexibility for environments that include Linux and Windows host application servers.

David Angwin, senior marketing manager for Wyse in northern Europe, said the 5150SE will appeal to companies that need a more capable terminal than Wyse's entry-level models. At £239 ex VAT it is cheaper than high-end devices running Windows XP Embedded. 'It also benefits from good driver support because of Linux on the PC,' Angwin said.

**The Winterm S50: Linux-based**

The S50 is a Linux version of the S30. Both are based on faster processors than earlier Winterm models, but are simpler and more compact.

Wyse plans to ship these models with no built-in operating system in the near future for large organisations to use as they see fit. Firms will be able to switch their terminals between Linux, Windows CE, Windows XP Embedded, and Wyse's own Blazer platform.

This will be enabled by a new version of the firm's Rapport management suite. Under the control of Rapport, a terminal will install its operating code from a server when first connected to the network and an administrator can use Rapport to reboot it with a different software image.

**Daniel Robinson**



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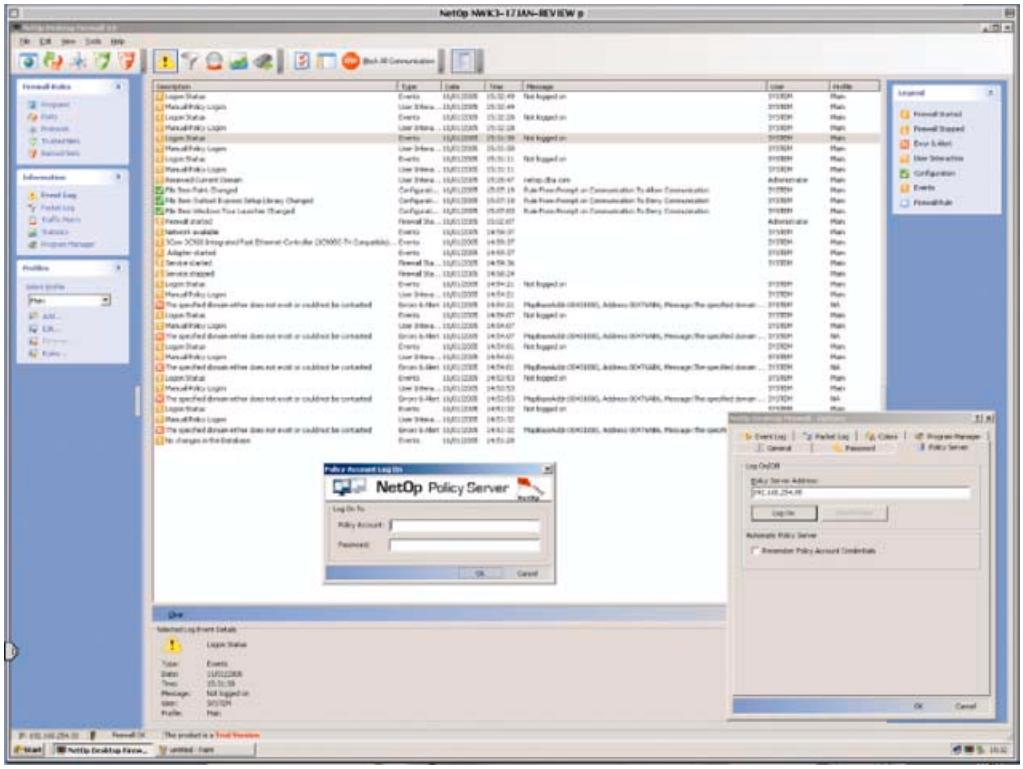
FIREWALL

# Netop Desktop Firewall

## Wizard-based and powerful software with some great features




Version 3 of Danware Data's Netop Desktop Firewall can be deployed either as a standalone system or as part of a corporate rollout that can be centrally managed via the Netop Desktop Firewall Policy Server. Initially we looked at it as a standalone firewall, running under Windows 2000 Professional SP4 and XP Professional SP2 on a dual-boot Pentium 4-based laptop.

Once installed, Netop goes through a wizard-based setup phase. This detects any current processes that are running and allows the user to add or remove them, so that only approved processes can execute during startup. When you've sorted this out, the firewall detects the local area network (Lan) and allows you to select permissions for outward-bound traffic.

Users can choose to allow all, deny all, or use a default setting that opens a predefined selection of ports. By default, inbound communication from other computers on the same network is blocked, except for domain controllers, which Netop will automatically detect. To allow communication with other systems you need to establish a trust between each pair. This requires you to input the IP address of the system you want to trust and then choose whether to allow communications in both directions or just one.

In use the firewall let us easily configure which processes could run, which IP addresses we could access, which ports we could use and the protocols that could run from our desktop. For instance, we could allow inbound access only to fileshares, by making the IP address of the system needing access to files on our system a trusted one. We could also block ports used by file transfer protocol (FTP). Theoretically, once all the usual Windows processes have been dealt with, it's possible to set Netop so that any new ones are killed automatically – something that should stop any malware taking over the system.

We also installed the Netop Policy Server running under Windows 2000 Server with Active Directory installed, DHCP enabled and our system configured as a primary domain controller.

A master server is created that holds the security policies for the desktop systems in a proprietary database and applies these through so-called replica servers, which can be set up at points throughout the network so they can see all desktop systems with the firewall installed.

The Netop Policy Server also has an independently running Guard program that detects the status of the master and replica servers. There's also a database backup tool, which can be used to store or roll back the policy database. Unfortunately this is a proprietary database – we believe Netop would do better to move to a standard SQL database, for example.

Using this system made it easy to define an Active Directory group that would represent a physical group – such as the human resources department, and create policies specifically tied to its applications, applied to the desktop systems via synchronisation with the replica servers.

Netop specifies that, although these components can exist on a single system when the system is being tested, in a production environment they would be installed on different systems, and normally duplicated on other systems for redundancy.

The server operating systems supported by Netop Policy Server are Windows 2000 Server and Windows Server 2003.

**Dave Bailey**

### DETAILS

**PRICE** £34.07 single-user licence (£29 ex VAT); £716.75 25-user licence (£610 ex VAT)
Netop Desktop Policy Server costs £1,173.82 (£999 ex VAT)
**CONTACT** Netop **www.netop.com**
**SPECIFICATIONS**
Pentium 233MHz or compatible • Windows XP Home/Pro/2000 Pro • Operating system Ram requirement plus additional 32MB Ram • VGA graphics • 10MB free disk space • At least one network adapter or modem • Winsock 2 or compatible TCP/IP • Internet access (for initial product registration) • Policy Server requires Windows Server 2003 Standard, Web Edition, Enterprise Edition, Windows XP Professional, Windows 2000 Server, Advanced Server or Windows 2000 Professional
**PROS** Wizard-based setup; powerful
**CONS** Proprietary policy database
**VERDICT**
**A very powerful firewall. In the right hands, process control makes it almost bulletproof**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **EASE OF USE** | ★★★☆☆ |
| **ENTERPRISE VALUE** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |



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WIRELESS LAN

# Aruba AirOS 2.3

## One of the best of its kind, but not cheap

**AirOS 2.3, the new version of Aruba's AirOS wireless Lan management software features many improvements but is an expensive option**

Aruba's latest version of its AirOS wireless Lan (Wlan) management software aims to improve functionality for established hardware, such as Aruba AP-60/61 access points (APs), and for recently introduced kit such as the Aruba 70 access point.

We tested the software using an Aruba 800 Wlan switch and four Aruba AP-61 APs. Once we had upgraded the 800 Wlan switch with the new firmware and rebooted it, the switch configured the 'thin' AP-61 APs with the new functionality.

One improvement is support for deploying Aruba's APs remotely over the net using 3DES IPSec security with PKI and NAT-T support, though only AP-60/61 and 70 models support this.

To manage the 800, we browsed to it using a desktop PC connected to the local subnet, although managing it wirelessly through a remotely deployed AP-61 access point is possible. AirOS 2.3 has a network monitoring page and a new diagnostics page, for better troubleshooting by network administrators.

AirOS version 2.3 supports Wifi Protected Access 2 (WPA2). Since AirOS supports virtual service set identifiers (SSIDs), we could configure APs to behave as if there were two different Wlans available, so we could set up one requiring WPA2-type passwords and another with standard access.

Release 2.3 improves Aruba's management of radio frequency (RF). It has better visualisation of RF parameters, plus interference and coverage area, and can locate rogues and allowed clients to an accuracy of 3m.

We could also set up a remote authentication dial-in user service (Radius) server, to authenticate wireless clients logging on to specific Wlans and wired users routed through the Wlan switch.

**Dave Bailey**

### DETAILS

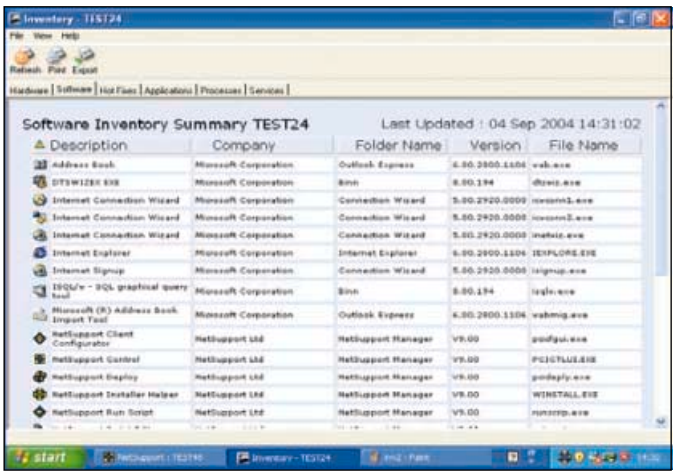
**PRICE** £4,984 (£4,242 ex VAT)
**CONTACT** Aruba 020 7958 9022
**www.arubanetworks.com**
**SPECIFICATIONS**
Aruba Lan switch • PC with browser
**PROS** Clean, easy-to-use GUI; WPA2 support
**CONS** Expensive; no help option
**VERDICT**
**One of the best enterprise Wlan management packages available, but like all software at this level, it's pricey**

| | |
|---|---|
| **FEATURES** | ★★★★☆ |
| **EASE OF USE** | ★★★★☆ |
| **ENTERPRISE VALUE** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

REMOTE SYSTEM MANAGEMENT

# Netsupport Manager 9

## An improved, easy-to-use upgrade




**Version 9 of Netsupport Manager offers a graphical interface that is simple to use, and the upgrade has a variety of new features and improvements**

Version 9 of the Netsupport Manager system management and remote control suite aims to offer several improvements, including an enhanced interface, inventory system and new monitoring mode. It also marks Netsupport's first attempt to support Linux and Pocket PC devices.

The graphical interface is easy, and administrators have two screens: the first for setting up, managing and detecting clients, and the second for viewing and interacting with clients.

Clients can be set up via the configurator or by loading a standard configuration to the system you will manage remotely. There are many connectivity, audio and security options.

Administrators can view what a remote client is doing, share control of it or take it over. The inventory function provides information on the hardware configuration of a remote client, programs being run and patches and hot-fixes applied. Data on processes and services can be obtained through the console, but better reporting tools would be useful to identify and compare software and hardware configurations on clients.

Clients can request help, call the administrator or use chat, but only when the administrator's remote control panel is online. It would be useful to queue a request to arrive when the control panel becomes available.

For Windows users who have or are trialling Linux systems, Netsupport 9 does not require a virtual network computing (VNC) client, although one is needed to connect to and remotely control Mac systems. We connected easily to Suse and Mandrake clients, but control was better for Windows systems than Linux desktops.

**Dave Bailey**

### DETAILS

**PRICE** 1 user: £133.95 (£114 ex VAT); 2: £211.50 (£180); 10: £564 (£480)
**CONTACT** Netsupport 01778 382 270
**www.netsupportsoftware.com**
**SPECIFICATIONS**
486 processor • 4MB Ram • 10MB disk space • Supports Dos, Server 2003, IPX/SPX, Netbios or TCP/IP, Windows 95 upwards; Suse, Red Hat/Enterprise, Mandrake & Fedora; Pocket PC 2003 Activesync/Wifi Lan, 32MB Ram
**PROS** Easy to use; OS support
**CONS** Reporting tools
**VERDICT**
**Easy; reporting tools not great**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **EASE OF USE** | ★★★★☆ |
| **ENTERPRISE VALUE** | ★★★★☆ |
| **OVERALL** | ★★★☆☆ |

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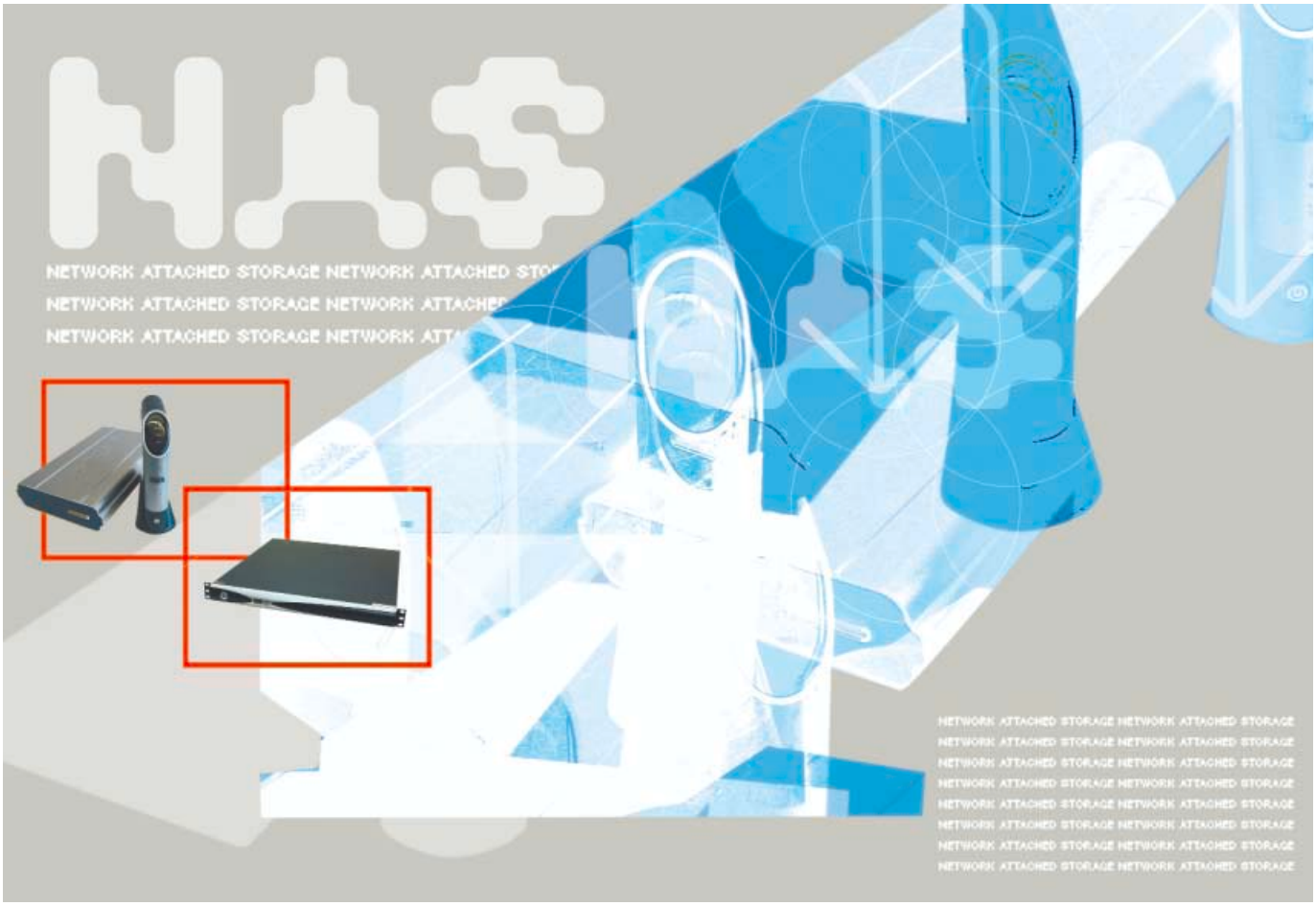
CISCO SYSTEMS

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Editor's Choice

# A question of sharing

**WORDS:** JOSÉ PLANA MARIO

Linking hard drives to a Lan can offer many benefits in a small office or at home. Find out which device is right for you and discover some online and DIY alternatives

Network attached storage (NAS) is simply hard disk storage, but is a term that has proved a dream for many marketing departments determined to confuse companies with black-art terminology.

As the name suggests, the hard disk is attached to a local area network (Lan) and has its own network address, rather than being on a single department's server, so everyone has access to this common space. As per-gigabyte hard drive prices fall, these small solutions are becoming increasing common in the workplace.

Inside the box, one or more IDE drives provide space, from a small hard drive (for instance, 40GB) at the cheaper end of the market, to Raid configurations providing over half a terabyte as you spend more money.

Their usefulness is varied, from a traditional backup device – like tape drives, but much faster – to a shared folder on the network. Additionally, if the system supports HTTP or FTP, it can be used to exchange files over the Internet.

In practice, these appliances offer other facilities, particularly those aimed at the small-business or domestic market. Included in this group test are models that come with their own wireless access point, or others acting as a USB hard drive. We've printed full reviews of the two top devices here, but you can read reviews of all the products at **www.pcw.co.uk/products/hardware/1161499**.



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**'If ease of installation and use are key factors, the Iomega 160GB Network Hard Drive is the best on test'**

## One size fits all...

The problem with sharing a network storage drive is not the device itself, but the server handling the process. In general, each drive will include a small computer with its own operating system acting as a server, allowing networked file sharing and supporting a series of specific protocols.

The most common configuration is a hard drive attached to an ARM microprocessor-based computer with embedded Linux and running Samba, which uses the CIFS file sharing protocol native to Windows and Mac OSX. Others allow for data access via FTP or HTTP for clients working on any platform, using TCP/IP, or offer other less common protocols. In general the appliance will only support a certain file system and will handle operations on its own, both when formatting and when verifying. Furthermore, they usually include a configuration webpage with options to enforce these actions and modify the appliance's status.

If you want to connect it to a large network, you may want to do so through a Windows Server Active Directory, LDAP server or similar in order to manage it individually.

So as ever, before buying a NAS device, you need to consider your requirements. A 40GB hard drive, for instance, could soon become full if you have many large files to back up. You need to know how many users are going to access the NAS simultaneously, and whether your company has expansion plans, because those could affect future performance. Appliances acting as a bridge between platforms should support as many protocols as possible.

Finally, while some will want a NAS device as backup for a static network, others will need to carry their data with them. In this case, small and light is a benefit, as is availability of a USB port, in case there is no network access point at the new destination.

**Some NAS appliances, such as the Iomega Nas A300m, look suspiciously like a computer. In fact, they are a full system with special software**

**If you're looking for a portable, user-friendly device, the Iomega 160GB is worth considering**

## A look at the products

Among the products on test, the wireless Asus WL-HDD 2.5, like the Linksys Network Storage Link, only provides the hardware to handle converting a more or less conventional storage medium into a networked file server. It is not aimed at workgroups with lots of demanding users and, if you try either, the product's performance will be hit.

A 2.5in hard drive is connected directly inside the machine, and configuration and start-up were relatively easy. It worked both in AP (access point) mode and as a wireless storage device, although it was unclear how to disable the WL-HDD's wireless functionality.

The WL-HDD's USB port is used to copy the contents of portable USB memory keys to the hard drive (into separate and numbered folders), rather than connect it to the computer.

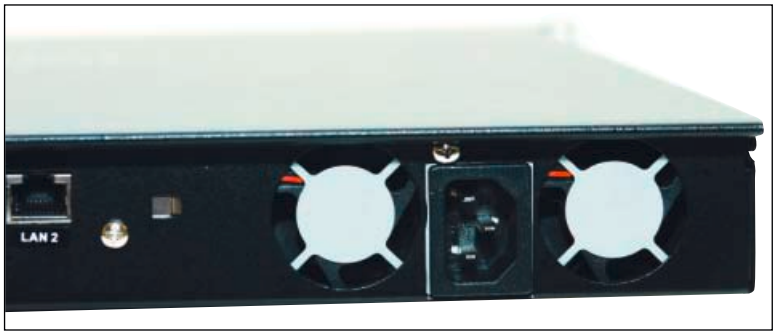
While the WL-HDD provides portable storage facilities and a way to set up a wireless network wherever you like, the smallest of the network hard drives we tested was the Ximeta Netdisk Mini. It is a portable USB device that can be shared via Ethernet. But we found a number of negative points in this device to offset this benefit. For instance, when we attached it to our switch, it did not use CIFS for file sharing – instead, a driver needed to be installed on our system – and it also lacked an IP address.

Installation was not as simple to follow as the other devices – you have to set up the driver, create partitions and format the drive before you can access it. Even then, access proved problematic. While several computers could access the device simultaneously, two users could not write to the drive at the same time, limiting its usefulness.

On the plus side, the device easily outperformed the others we tested. If you use NTFS format, then other platforms can access it, even with the installed Ximeta driver, and you control the Netdisk's status from an icon in the system's notification area.

If hard drive handling is important to you, look at the Asus WL-HDD 2.5, as it supports multiple formats from Fat through to ext3 and NTFS. Even though its specifications claim it does not run with products that

**The Snap Server is easy to use and great for small workgroups**




**One of the drawbacks of a rack format is the requirement for powerful cooling**

The Ximeta Netdisk Mini is a portable USB device that can be shared via Ethernet

have a capacity higher than 40GB, we set up several partitions of this size.

The Iomega 160GB Network Hard Drive High-Speed Ethernet differs from the Ximeta in several ways. It is rugged and bulky, not portable, and was easy to get up and running, taking only a few minutes, thanks to its Discovery tool.

The Iomega only allows access to hard drive content via CIFS, but it does let you make requests from two or three workstations simultaneously without denting performance too much.

If ease of installation and use are key factors in choosing a device, the Iomega 160GB Network Hard Drive is the best option on test.

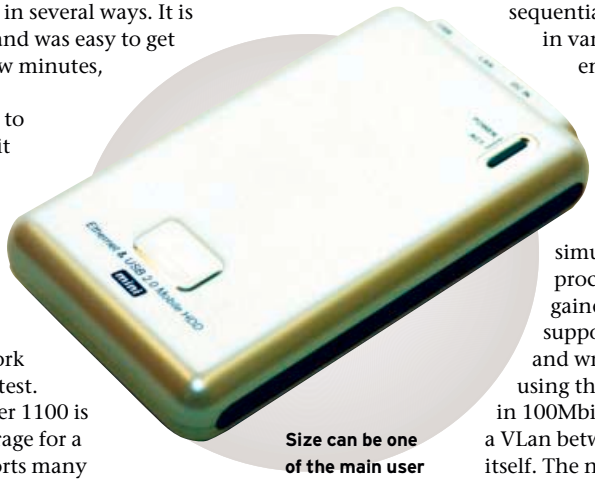
The Snap Appliance Snap Server 1100 is designed to provide network storage for a small number of users and supports many protocols. Environments as varied as Windows, Netware, Unix/Linux or Mac OS can use the appliance simultaneously without a hitch, which makes it particularly appealing for mixed networks.

Many manufacturers could learn something from this product when building their own. Snap Server does exactly what it claims to do – nothing more, nothing less.

In Windows-based structures, it can obtain groups and users from Active Directory's Primary Domain Controller (PDC), thus simplifying administration tasks. Its management is extremely easy: web-based, with a well thought-out interface, making access to most tools child's play. The software responsible for providing these applications is SnapOS, a proprietary operating system, which can be upgraded with a series of Java-based extensions. So it is easy to maintain automated backups, for example.

Among other functions, the product allows you to define space quotas for every user and establish warning notifications for administrators. The documentation is very detailed, making it straightforward to set up security or add new users. We found only one drawback: the process for deleting a password could be improved.

Snap Server is simple to use and its ability to communicate with virtually any type of network is very much in its favour. The downside is its price, which is high for the 160GB hard drive capacity it offers.



Size can be one of the main user concerns, which is why builders of products for the home market consider this to be a key factor

## How we tested

When assessing the performance of this type of device, we needed to establish how they behave when copying, reading and writing files of several sizes in different 'blocks' and in different ways. We used an open-source application called IOzone, which runs under both Windows and Linux. This analysis accesses a file of any size you choose (in this case, 640MB), writing and reading sequentially, randomly and repeatedly. Every access is in varying block sizes, starting from 64MB to the entire file. In this way, we arrive at Kbytes/sec figures in each mode, so we can see how the appliance performs when accessing files of every type. Every device in our comparison took six hours to perform the test, so the amount of data transferred was considerable.

In addition, we tried working with 10MB files simultaneously, using up to five independent processes in each measurement. In this way we gained a picture of scalability (number of clients supported simultaneously), performing several reads and writes at the same time. All tests were carried out using the same machine, with a Gigabit Ethernet card in 100Mbits/sec mode, connected to an Intel switch with a VLan between two ports: the NAS and the machine itself. The number of packets passing through the ports was monitored at all times to ensure that the appliance was not overloading. The tests were run under Windows XP SP2, and we found that, in some cases, a Samba client (under Kernel 2.6) was slower than XP, even on the same machine.

Turn over to read reviews of our two Editor's Choice winners, and take a look at the table of features for specs and overviews all the products we reviewed. There's also some useful information on online alternatives on page 149.

The Asus WL-HDD 2.5 is a small, lightweight product that supports multiple formats

## DIY alternatives

**Aside from the products under review in this group test, when you're thinking of buying an NAS appliance, there are other options. For instance, if you are sufficiently skilled you could do it yourself using an old computer with a pair of hard drives running Samba, plus Linux, FreeBSD or similar operating system.**

**Or you could take the Windows route, although this would require the hardware to be of a higher spec, which means a higher price tag. In addition, the Windows XP Home and Professional editions support only five and 10 connections respectively. The obvious alternative is to resort to Windows Server 2003, paying a premium price with higher requirements. The main benefit this gives you is a computer with a shared folder that can be managed remotely via Remote Desktop.**



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HIGH END

# Iomega Nas A300m

If you need more than just an entry-level solution and your budget can stretch a bit, the Iomega Nas A300m is a good example of what you will find on the professional market. Although its price tag is high for small businesses or home environments, larger companies will find this well suited to their requirements, in part because of the large number of upgrade options and excellent network integration.

Inside this high-spec product are three hard drives, a Pentium III processor and several gigabytes of Ram. At the back it has two Ethernet ports, two USB ports, a VGA port and a serial port.

Once installed, all we had to do was connect to the Ethernet port and start the configuration facility. Once detected, the A300m accesses a web-based interface where there are a good number of tools and options.

The system includes an integrated virus scanner from Computer Associates, usage quotas, creation of operating system 'images' and Raid 5 storage. It also supports user access to files via HTTP, CIFS, FTP, NFS and Appletalk, so you should not encounter problems when working in a multiplatform environment.

The configuration interface is well thought out and effective, and is a simplified version of the system it supports: Windows Server 2003 Appliance Edition. You access this by attaching a USB keyboard and mouse or via Remote Desktop services.

If your aim is to exchange files between a large number of users (or a handful of very demanding users), the hardware will not let you down. Understandably, it is a much more complex product to configure and administer than the other products reviewed here, because of its huge potential, but it is an extendable and reliable device.

**DETAILS**

**PRICE** £1,161.81 (£988.77 ex VAT)
**CONTACT** Iomega
**www.iomega.com**
**SPECS** 240GB capacity • Supports CIFS, FTP, NFS & Appletalk protocols • Virus scanner & Windows Server 2003 Appliance Edition • Administration web-based or via Remote Desktop
**PROS** Integration of virus scanner; accessibility of Windows Server 2003; administration webpage
**CONS** Administration webpage tied to Internet Explorer
**VERDICT**
**A good product for medium-sized workgroups and price per GB is spot on**

| | |
|---|---|
| **FEATURES** | ★★★★★ |
| **PERFORMANCE** | ★★★★☆ |
| **ENTERPRISE VALUE** | ★★★★☆ |
| **OVERALL** | ★★★★☆ |

SMALL TO MEDIUM

# Linksys Network Storage Link

Linksys is part of Cisco's consumer market division, and the Network Storage Link (NSLU2) is designed for sharing USB storage devices. Its job is to allow users to connect external modules, whether hard drives or flash memory devices, directly to an Ethernet network.

To achieve this, it has a pair of USB2 ports and an Ethernet port. When lab testing the NSLU2, we took the manufacturer's advice and attached a Maxtor hard drive (the 160GB One Touch).

To access configuration options, you just point your browser at the previously established IP, following the instructions given by the software on the product CD. From this webpage you can add and modify users, groups, access permissions, quotas and similar parameters, all from a user-friendly interface.

One point worth highlighting is that a lot of thought has been given to inexperienced users, such as providing warning beeps when the appliance fails to receive an IP address from a DHCP server, or when there is web access to contents.

However, a couple of features deviate from this simplicity. One problem is that you can only use one port to attach flash memory devices, which can lead to some confusion. But the biggest problem occurs when using a conventional USB hard drive because, once formatted, it will not be recognised by a PC running Windows, which means relying on the Linksys device to access files. Being unable to move the USB hard drive doesn't make much sense, so the use of Linux is not a brilliant idea.

Apart from this, the file-sharing options are appropriate, while performance is above average, and the product has huge potential.

**DETAILS**

**PRICE** £97 (£82.55 ex VAT)
**CONTACT** Linksys
**www.linksys.com**
**SPECS** Up to 160GB capacity single drive (hard drive not included) • Supports CIFS and HTTP protocols • Web-based administration
**PROS** Small; efficient
**CONS** Formats drives using Linux, which means they are not directly accessible to Windows
**VERDICT**
**This is a good, affordable device that is user-friendly for the less experienced**

| | |
|---|---|
| **FEATURES** | ★★★☆☆ |
| **PERFORMANCE** | ★★★☆☆ |
| **ENTERPRISE VALUE** | ★★★☆☆ |
| **OVERALL** | ★★★☆☆ |

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## Table of features

| | | | | | | |
|---|---|---|---|---|---|---|
| **MANUFACTURER** | **ASUS** | **IOMEGA** | **IOMEGA** | **LINKSYS** | **SNAP APPLIANCE** | **XIMETA** |
| **MODEL** | **WL-HDD 2.5** | **160GB NETWORK HARD DRIVE HIGH-SPEED ETHERNET** | **NAS A300M** | **NETWORK STORAGE LINK (NSLU2)** | **SNAP SERVER 1100** | **NETDISK MINI 40GB** |
| Price inc VAT (ex VAT) | £59 (£50.21) | £205.57 (£174.95) | £1,161.81 (£988.77) | £97 (£82.55) | £420.35 (£357.74) | £136.78 (£116.41) |
| URL | http://uk.asus.com | www.iomega.com | www.iomega.com | www.linksys.com | www.snapappliance.com | www.ximeta.com |
| Full review | www.pcw.co.uk/products/hardware/1161499 | | | | | |
| Capacity (GB) | N/A (supports up to 80) | 160 | 240 | N/A (supports up to 160) | 160 | 40 |
| Dimensions (mm) | 180 x 90 x 25 | 210.8 x 119.4 x 3.5 | 445 x 432 x 42 | 95 x 26 x 25 | 127 x 228.6 x 76 | 23.5 x 133 x 80 |
| Supported file systems | Ext3, Fat, NTFS | Fat | NTFS | Ext3, Ext2 | Proprietary | Depends on OS |
| Ethernet ports | 1 | 1 | 2 | 1 | 1 | 1 |
| USB2 ports | 1 USB1.1 | 1 | 2 | 2 | 0 | 1 |
| Wireless Lan interface | 802.11g | ✗ | ✗ | ✗ | ✗ | ✗ |
| Firewire ports | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| **PROTOCOLS SUPPORTED** | | | | | | |
| CIFS | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |
| FTP | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| NFS | ✗ | ✗ | ✓ | ✗ | ✓ | ✗ |
| Appletalk | ✗ | ✗ | ✓ | ✗ | ✓ | ✗ |
| HTTP | ✓ | ✗ | ✓ | ✓ | ✓ | ✗ |
| IPX | ✗ | ✗ | ✓ | ✗ | ✓ | ✗ |
| Web administration | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |
| External power supply | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ |
| LED status indicators | 6 | 2 | 2 | 4 | 4 | 2 |
| Compatibility | Access via TCP/IP | Access via TCP/IP | Access via TCP/IP | Access via TCP/IP | Access via TCP/IP | Linux, Windows, Mac OSX |
| Software | Configuration utilities | Discovery Tool, Automatic Backup, Musicmatch Jukebox, Adobe Photoshop Album | CA Antivirus, Etrust Inoculate IT, Windows 2003 Appliance Edition | Configuration utilities | Symantec Powerquest Datakeeper 2i, Protector Desktop Edition | Driver software, Management software |
| Other features | Can be used as wireless access point; supports WPA and UPnP. 2.5in ATA hard disk sold separately | Automatic configuration; 8MB buffer | Quotas, security filters; remote desktop; admin alerts; file snapshot capability; serial port | Linux embedded; USB hard disk sold separately | Supports Java extensions | Uses proprietary NDAS technology; requires a driver |
| **PRODUCT OVERVIEW** | | | | | | |
| Pros | Small, lightweight; includes a wireless access point | Easy to install and commission | Integration of virus scanner; accessibility of Windows Server 2003; good admin webpage | Small; efficient | Support for many protocols means it can be attached to mixed networks | Portability and processing speed |
| Cons | Slow; confusing to set up some options | Few options when using it from other platforms | Administration webpage tied to Internet Explorer | Formats drives using Linux, which means they are not directcly accessible to Windows | £2.60 per GB is a little steep compared to other products tested | Does not allow simultaneous multi-user writes; requires driver installation |
| **Verdict** | **An access point and NAS server in the same device is a good idea for anyone requiring mobility, but its performance is a bit slow** | **A very user-friendly device at a good price, ideal if you're on the move, but less so as a shared storage medium** | **In spite of format, noise and accessibility drawbacks, this is a good product for medium-sized workgroups, and price per GB is spot on** | **This is a good, affordable device that is user-friendly for the less experienced** | **Expensive compared to other reviewed products, but it is a good choice for small workgroups with backup requirements** | **Performance is good, drive capacity is low, but the need for installed drivers and its inability to support simultaneous writes from several computers are cons** |
| **SCORES** | | | | | | |
| Features | ★★★★☆ | ★★☆☆☆ | ★★★★★ | ★★★☆☆ | ★★★★☆ | ★★★☆☆ |
| Performance | ★★☆☆☆ | ★★☆☆☆ | ★★★★☆ | ★★★☆☆ | ★★★☆☆ | ★★★★☆ |
| Value for money | ★★★☆☆ | ★★★☆☆ | ★★★★☆ | ★★★☆☆ | ★★☆☆☆ | ★★☆☆☆ |
| Overall | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★☆☆ | ★★★☆☆ | ★★★☆☆ |

## Online storage alternatives

**We've looked exclusively at hardware NAS solutions in this group test, but an alternative worth considering if you need remote access is secure online storage. This table lists a selection of the services available and, as you can see, there's a wide variety to suit most needs. The advantages are that you can access your storage from any browser, but the downside is that costs can quickly mount up.**

| SERVICE NAME | URL | ONLINE STORAGE (MB) | DOWNLOADS (MB) | COST PER YEAR |
|---|---|---|---|---|
| Bigvault Online File Storage | www.bigvault.com | 100 | Unlimited | $36 (£19.10) |
| Files@biscu.com | www.biscu.com | 1,024 | 6,144 | $18.43 (£9.78) |
| Idrive | www.driveway.com | 100 | 0 | $54 (£28.65) |
| Intekk | www.intekk.com | 100 | Unlimited | $60 (£31.84) |
| Iomega Istorage Online | www.iomega.com/istorage | 250 | Unlimited | $79.95 (£42.43) |
| Isyncdata.com | www.isyncdata.com | 200 | Unlimited | $99 (£52.54) |
| My docs online | www.mydocsonline.com | 50 | Unlimited | $34 (£18.03) |
| Punch Webdrive | www.punchnetworks.com | 10 | Unlimited | $99 (£52.54) |
| Streamload Standard | www.streamload.com | Unlimited | 10,240 | $99.95 (£53) |
| Xdrive Plus | www.xdrive.com | 5,120 | Unlimited | $99.50 (£52.76) |
| Yahoo Briefcase | http://briefcase.yahoo.com | 30 | Unlimited | Free |
| Znail | http://znail.com | 5 | Unlimited | Free |

# Editor's Choice

There is no doubt about what the differences are between enterprise and small-office or home NAS appliances. The former are capable of supporting heavy workloads with multiple users accessing simultaneously, while the latter tend to focus their efforts on just one.

So, when choosing a professional solution for a workgroup, our **Editor's Choice** award has to go to the **Iomega Nas A300m**. It is scalable, with good performance and is very simple to configure, even though it is fully customisable. Although its price per GB is high, because rack formats increase costs, it is a comprehensive product.

Other devices here are aimed solely at the domestic market. While Ximeta offers a very small and lightweight solution, it is expensive when compared to others with more capacity and similar orientation, as in the case of the most basic Iomega or even Asus models. The Iomega 160GB Network Hard Drive High-Speed Ethernet is a simple and efficient device, ideal for anyone requiring a portable hard drive but is reluctant to delve into security issues. The Asus WL-HDD 2.5 offers numerous options in spite of its small size. On the downside, it is not very fast, because of the 2in hard drive it houses, and aspects of its interface could do with some improvement.

Iomega Nas A300m

'We found the Linksys solution was straightforward to use, even for inexperienced users'

Linksys Network Storage Link (NSLU2)

Top marks in terms of small business solutions go to **Linksys**. Its **Network Storage Link** wins our **Editor's Choice** for its performance, utilities and retail price. We found it to be straightforward to use, even for inexperienced users, with above average performance and a reasonable price tag.

Finally, our **Highly Commended** award goes to the **Snap Appliance Snap Server**. This product was easy to configure, thanks to its clear instructions and user-friendly interface, and its performance was good. We felt the price was a bit steep, but this does not detract too much from what is otherwise a good product.



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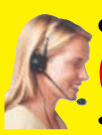

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# Hands on

EDITED BY NIGEL WHITFIELD

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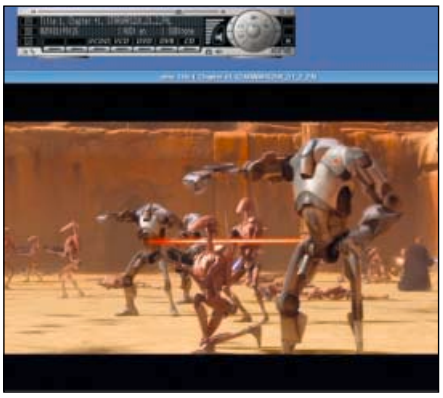

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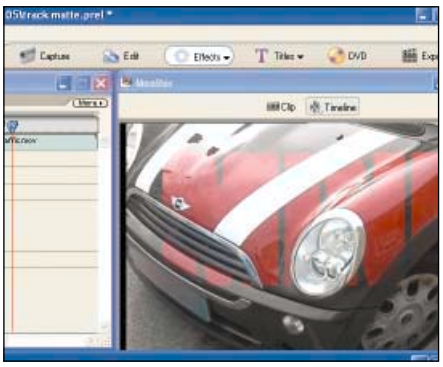
**All you need to know about the Xine project, which can help you to play DVDs using Linux**



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**Bring the background to life with some fascinating Chroma keying techniques**

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**Cut your Internet call costs using Voice over IP and SIP technology**

DVDs and video are hot topics in Hands on this month, with two of our contributors looking at ways to play back video on the devices of your choice, whether that's a PC running Linux or a pocket PC.

Barry Shilliday explains how you can add the appropriate software to your computer to allow playback under the open-source operating system, so you don't need to switch to Windows for entertainment. In Hardware Gordon Laing outlines how you can squeeze, compress and mangle your mpegs so they can be watched on a pocket-sized player.

And don't worry if you think your PocketPC is too sluggish to play back a video clip well – in Overclocking, there's a look at how you can boost its speed, or slow it down to prolong battery life.

Video is featured too in this month's Digital imaging column, where Ken McMahon shows you the techniques behind blue and green screens and how you can use them to change the background of a clip. We can't promise you'll be the next George Lucas, but you will be able to add some new effects to your videos.

The office-bound will find tips a plenty in the Word processing section, with Tim Nott explaining how to fill in pdf forms and tidy up your style sheets. In his Spreadsheet column, Stephen Wells explains how you can calculate change efficiently and use the data functions in Excel to analyse lists. Database users can find out from Mark Whitehorn how to create summaries and totals from non-numeric fields.

Microsoft Office also pops up in Tim Anderson's Visual programming column, where he explores its future as a development platform and whether you should use VBA, .Net or other techniques to program Office. He also explains how you can control audio playback from within Word.

Over in Web development, we've the second part of our look at CSS and how you can use it to control the layout of your website. Alan Stevens explains how you can add Voice over IP facilities to your network with minimal fuss in Networks. Tim Nott goes hunting for a panda in Windows, and we've also got our usual four pages of tips and solutions based on problems sent in by you.

**Nigel Whitfield**



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# Advice from our experts

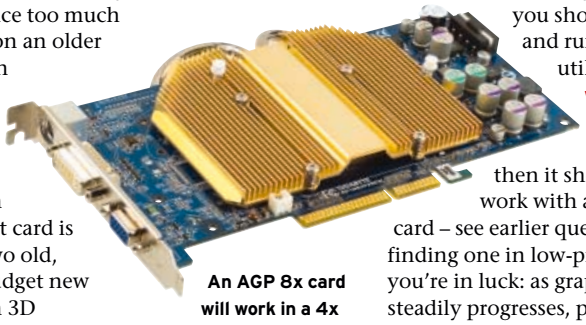
Our Hands on experts answer your questions and solve your problems

## Hardware

**Q** I'd like to upgrade my ageing Geforce 3 graphics card, but all the new cards seem to be AGP 8x, whereas I only have an AGP 4x slot. Are 8x cards backwards-compatible with 4x slots and, if so, would there be much compromise in performance?

**Steven Welch**

**A** AGP 8x cards should work in 4x slots without any problem, but they'll be limited to transferring data at 4x speeds. In practice though you're unlikely to notice too much difference, especially on an older system where the main processor may prove to be a greater bottleneck to 3D gaming performance. One thing's for certain though: if your current card is more than a year or two old, switching to even a budget new model should result in 3D improvements, despite having a 4x slot and a potentially ageing main processor.



**An AGP 8x card will work in a 4x slot, but it won't be running at its top speed**

**Q** I live in the UK and am looking to buy a TFT monitor from America to take advantage of the weak currency rates. However, would I have a problem with the differing voltage and current rates? Would a US-to-UK mains converter do the trick?

**Daniel Thomas**

**A** In theory your plan is sound. Since computer video signals are worldwide standards, there are none of the Pal and NTSC compatibility issues you have with American TV equipment in the UK. The only problem – as you correctly identify – is the difference in mains voltages. A US-to-UK mains transformer will do the trick, but if your monitor employs an external power brick adapter, you may be able to swap this for a UK-spec adapter, so long as it outputs the right voltage for the display. If there's an identical UK version of the monitor, check with the manufacturer in the UK for a replacement adapter. Remember though that imported equipment is subject to tax and duty on arrival in the UK, which for a computer monitor will work out at about 25 per cent.

**Q** My son has an NEC Powermate ML3 Flex PC which can only accommodate low-profile cards. It came with an Nvidia Riva TNT2 Model 64 which is getting a bit slow for current games. Do you know where I can get hold of a faster low-profile graphics card? The system board is a Micro Star MS-6506.

**Bob Greenwood**

**A** According to various specification sheets we believe your MSI motherboard has an AGP 4x slot, although to be certain you should download and run the CPUID utility from www.cpuid.com. If it does have an AGP 4x slot, then it should technically work with any graphics card – see earlier question. As to finding one in low-profile form, you're in luck: as graphics technology steadily progresses, previous generations of chipsets are often repackaged as low-profile cards. So while you're unlikely to find the latest and greatest graphics chipset in low-profile form, its budget version or recent predecessor will almost certainly be available in a shorter version – and this will be a great improvement on your TNT2.

Just browse the graphics card sections of specialist suppliers such as www.overclockers.co.uk and you'll immediately spot many cards which will fit the bill, such as one based on an ATI Radeon 9200.

Depending on your machine's case, you may have to disconnect one of the video outputs on the card and/or modify its metal blanking plate.

## Databases

**Q** I'm learning Access and I have got to the stage where I need to do some programming. Access seems to allow both macro programming and Visual Basic programming. Which is the best to learn for a novice?

**James Wilson**

**A** Macros were added to Access right from version 1 to make it easier for people to write very simple programs. The problem with macros is that they have limitations. If or when you hit those, you then have to move to VB; meaning you've then had to learn two separate programming processes.

If you are sure you will never have any complex programming requirements (and it is difficult to be sure of this) then macros are fine. Otherwise I'd bite the bullet and start with VB. I know it is more difficult to get started with it, but at least you won't find that it runs out of steam.

## Spreadsheets

**Q** Is it possible to monitor my PC's performance within Excel?

**Ulia Plotrowsky**

**A** If you have Windows XP and a recent version of Excel it is. On the Insert menu choose Object and then System Monitor Control. Press Ctrl & I and in the Performance Object box initially choose Memory. From the list underneath choose Available Mbytes and click the Add button.

There is no acknowledgement but click Close anyway. Your Excel worksheet will now show an animation of this factor. This is just an example. There are many more aspects of performance you can also display (see screenshot 1).

**Q** I have being trying to calculate the total value of goods purchased if two other criteria are met.

I'm using Excel 2003. I've named the range containing the purchase prices 'Cost'; the range containing condition 1 'Phase'; and the range containing condition 2 'Status'. Cell C7 contains the phase number. Can you help me?

**William Whitford**

**A** In the cell where you wish to have the answer enter:

```
=SUM(IF(Phase=$C$7,IF(↙
Status="y",Cost)))
```

*(Key: ↙ code string continues)*

and press Ctrl & Shift & Enter as this is an array formula. Excel will include in the total only those costs which have the phase number specified in C7 and a 'y' under Status (see screenshot 2).

**Q** I work with Internet logs using Excel. The computer I use in the



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office has Windows 98 and Office 97. To assist others, part of the work involves selecting entries in the logs and highlighting sections within the URLs in bold or colour, but occasionally I work at home on XP. When I try to highlight part of a URL it immediately turns into a traditionally formatted hypertext link. I can turn off this link in individual cells but it turns on again as soon as any part of the URL is highlighted.

Since my office PC is being replaced with an XP machine, and the computer experts I work with don't know the answer, can you help?

**Robin Banks**

A On the Tools menu choose Autocorrect Options, then 'Autoformat as you type'. Remove the check from the box, Internet and network paths with hyperlinks. Then you can reformat any part of the link. You will lose the link though. You could Copy and Paste the range into Word and reformat there. Word lets you press Ctrl & Click to follow a custom-formatted link.

Another way in Excel, albeit fiddly, is to enter just the part you want to reformat into a distant cell. Reformat it. Then with Shift pressed choose Copy Picture on the Edit menu. Press Shift down again and choose Paste Picture to put it into the original cell. Move this picture around very carefully until the reformatted bit sits over the original hyperlink.

Q The Format menu on the VBA for Excel Standard toolbar has very few options. So how do you change the font style and size of macro code?

**Syeda Dhillon**

A It's not very intuitive, admittedly. On the Tools menu pick Options and then the Editor Format tab. Under Code Colours choose Normal Text and then pick your font style and size on the right-hand side of that dialogue box.

Be aware that when you do this it affects all your workbooks as you are customising your version of Excel (see screenshot 3).

Q Using Excel 2000 I wish to add halves but the Fraction format shows a half as 1/2 whereas I want to show it as the character map symbol of ½.

If I use the symbol it gives an error in addition.

**Malcolm Daines**

A Yes, it would. Excel is clever but it can't total symbols. If appearance is all-important you could Copy and Paste your finished work into Word and the Autoformat facility can give you the symbol you want.

Otherwise, in Excel, you could create the Custom format, 0 ½ (zero, space, half symbol) creating the half with Alt & 0189 on the numeric keypad. Then just enter the integer of the number. Use SUM() for totals but add to it the result of adding up the displayed halves in the range.

## Windows

Q I like to have the option of viewing XP picture folders as a list of photos showing details such as name, title, date taken and picture size, rather than the standard details which appear to be name, file size, type and date modified. While I can do this easily enough, I usually find that if I return to the folder at some later time, the selection of details has reverted to the standard list.

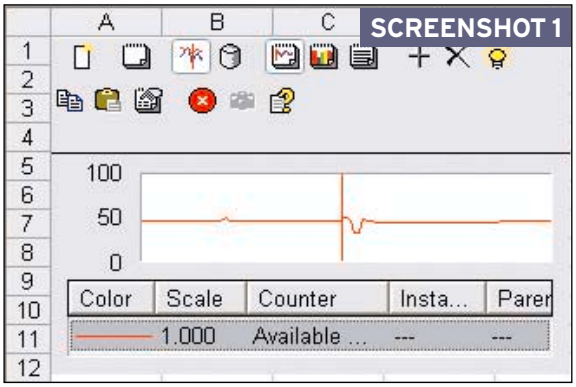
Is there a way of making Windows remember my preferred details? Secondly, is there a way of copying the details view of a folder's content and pasting it into Excel for manipulation and printing?

**David Blackman**

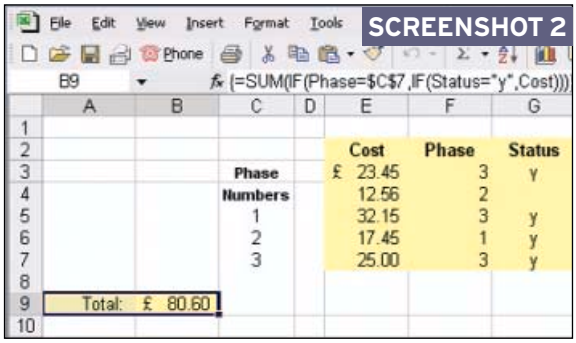
A You should be able to achieve the first by going to Folder Options, View, and ticking the 'Remember each folder's view settings' option. The second is more of a challenge. One thing you can do is to open a command prompt window, navigate to the folder and output the DIR command to a file, with, for example, DIR > flist.txt. You can then use the Excel text import wizard on the file. This won't, however, give you more than the standard file details. One tool that will is Snagit, from **www.techsmith.com**. One of its many capabilities is to capture the entire text content of any window – including folders. As screenshot 4 shows, you may have to experiment with the Excel Wizard settings and do some tidying up.

Q I use Windows 2000 Service Pack 4 and sometimes when I open a file, even a jpeg, an error message appears: Work Offline – No connection to the Internet is currently available. To view Internet content that has been saved on your computer click Work online. Click Try again to attempt to connect'. How can I stop this from happening?

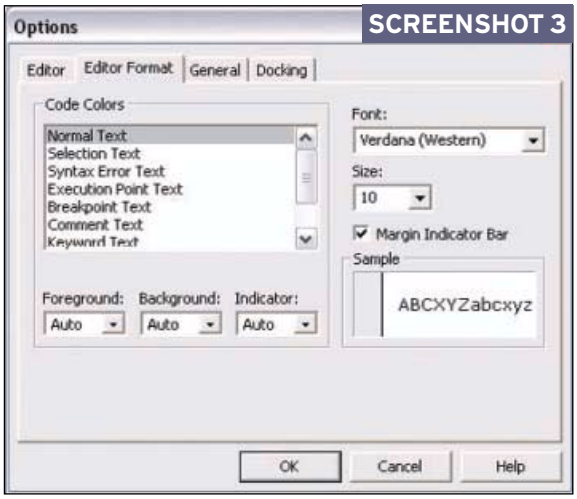
**Peter Forrest**



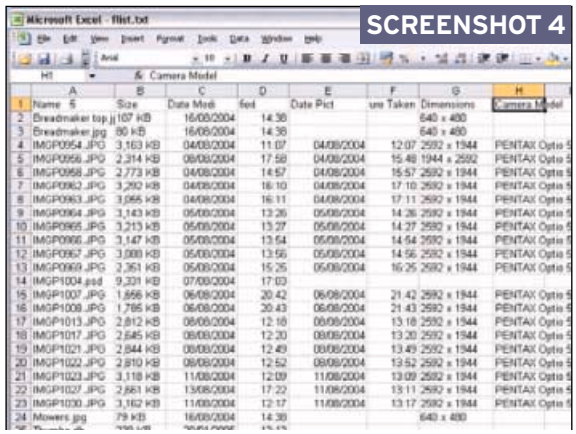

**Excel can monitor your PC's performance**




**Totalling costs based on two criteria**




**It's not easy to find, but you can change macro fonts**




**You may have to tidy up after bringing your folder content into Excel**



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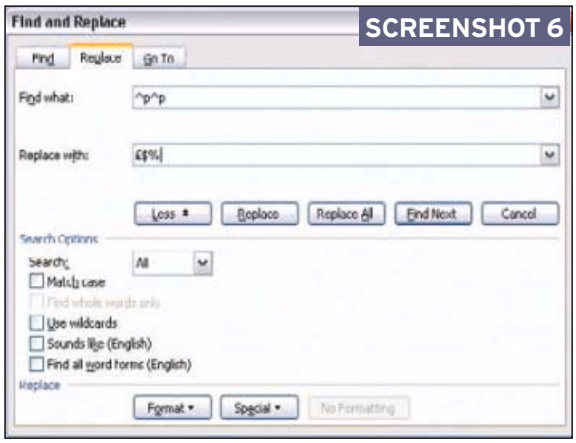
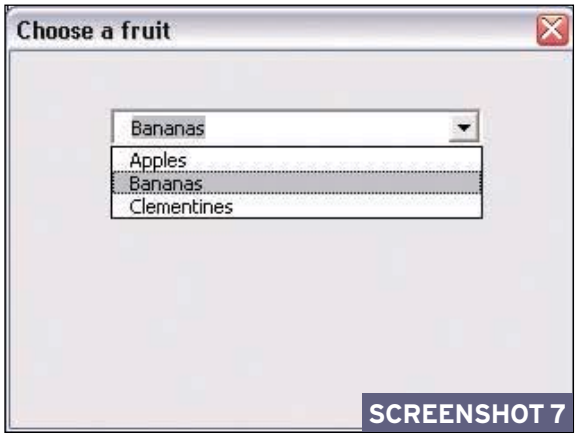
**Always check for viruses, trojans, and spyware if Internet Explorer acts up**




**Stage one of stripping out unwanted breaks**




**How to add fruit to a list in VBA**

A This problem is widespread and there is no single answer. Nowadays the very first thing you should do whenever you experience an Internet Explorer oddity is to run a complete anti-virus scan and a spyware scan, ensuring you have updated your anti-virus and spyware tools with the most recent signatures before scanning (see screenshot 5).

You haven't specified how you connect to the Internet, but this problem occurs with both dial-up modem and always-on broadband connections, though not always for the same reasons.

For example, file types such as jpeg which trigger this behaviour may be set to open with Internet Explorer. In that case, this problem would arise if you normally connect to the Internet though a modem dial-up connection and your Internet Options (in Control Panel) are not configured to connect automatically. But if you use broadband which is always on, the same behaviour (jpegs triggering this warning) could be due to flawed broadband software or misconfigured connection settings in Internet Options. These options are specific to your connection type – modem or broadband – and are usually detailed in the online help files of your ISP.

There are other possible causes, including the Google Toolbar and MSN Messenger software. If the problem arose after installing one of these tools, uninstalling it may resolve the problem. Some critical updates for Windows have also been known to trigger this behaviour. The applications and updates you have installed are listed by date in the Event Viewer (found in the Administrative Tools folder in Control Panel).

You may be able to link the onset of the problem to a particular entry in Event viewer. If you do track down the cause of the problem and it's a security patch, an application, or a utility, use Windows Update to ensure that your computer is completely up to date with critical security patches before reinstalling any other software and check for a newer version of the tool or application before reinstalling it.

## Word processing

Q I receive texts which have been prepared by 'typists' who insist on hitting the Enter key at the end of a sentence; some of these documents have originated from old Amstrads and so have a short line length.

I need a macro which will remove all carriage return line feeds (CRLFs) from a complete document. I know the respective Hex codes are D and A but can't make use of this.

Have you any idea how to tackle this problem? I'm using Microsoft Word 2002.

**Don Robinson**

A You can try the Autoformat command from Word's Format menu, but this doesn't always give the desired result. The time-honoured way is to run a search-and-replace for two CRLFs (or paragraph markers in Word parlance) and replacing them with a 'nonsense' string. Then repeat a search-and-replace for single paragraph markers, replacing them with a space (or nothing, depending on the original formatting). Finally, run a third search-and-replace for the nonsense strings and replace with single paragraph markers (see screenshot 6).

Q I am dipping my toes in the murky waters of VBA programming in Word and have got stuck creating a User Form. I can create a dropdown list box by dragging a 'Combobox' from the toolbox, but can't figure out how to populate it with a choice of items.

**Carole Dalhousie**

A The trick here is to first click on your User Form and give it a name – the first list item in the bottom left panel – and a caption – fifth item. We've used 'Choosefruit' and 'Choose a fruit'. Now click the ComboBox and give that a name, too (eg Fruit).

Next, right-click on the named form in the top left list and select 'View Code'. You can then populate the box with the following sample code:

```
Private Sub ↙
UserForm_Initialize()
With Fruit
AddItem "Apples"
AddItem "Bananas"
AddItem "Clementines"
End With
End Sub
```

Finally you need to call the User Form from the body of the macro:

```
Sub Fruitmacro()
Choosefruit.Show
End Sub
```

Obviously there's a deal more work to be done in getting the macro to do something useful with your choice, but this gives you a populated list when you run the macro (see screenshot 7).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**Q** Having produced reports in portrait format, with headers and footers, I need to paste graphs or spreadsheets from Excel into the document. The graphs or spreadsheets are produced in the normal manner, but when pasted into the document they need to be rotated through 90º in the document, ie landscape, but the headers and footers need to remain as original, ie portrait mode. If you paste the Excel data in a landscape sheet the headers and footers change to landscape mode.

**John Ironside**

**A** There's a sneaky way around this limitation. If you select and copy the data in Excel, then Paste Special in Word as a Picture (Windows Metafile or Enhanced Metafile), you will be able to select the picture, open the Drawing toolbar, then rotate the picture 90º left or right from the Draw menu on that toolbar.

## Digital imaging

**Q** I've got two 19in LCD screens on my new computer, Is there a video package that supports editing the video on one screen and watching the preview on the other? I would like to keep to a budget as well. I also would like good sound control for sound over video.

**Daniel Lynag**

**A** You don't say which, if any, dual-head graphics card you are using, but you should find an option in the display setup, which you can access from the display properties control panel, that will enable you to play full-screen video on one monitor, with your editing application in the other.

A much better option would be to install a video-editing card that supports output to a TV monitor. You can then see your movie as it will appear when watched and spot problems with colour, and cropping of the image.

**Q** I have made some SVCDs on CD-R media using Pinnacle Studio 8 to play on my home DVD player and they work fine. How can I transfer them onto a single DVD to play on my DVD player? I have tried copying those SVCDs using Roxio's Easy CD/DVD creator on a DVD+RW media using an NEC ND3520 DVD writer, but it won't play on my DVD player and I have two players, a Toshiba multi-region and a Samsung for UK region only.

Your help would be very much appreciated.

**Amir Aftab**

**A** The best option would be to author a new DVD using the original source material. If this is no longer available you'll need to get the video files from the SVCDs into Studio so you can re-encode them for DVD. You should be able to locate the mpeg1 files on the VCD and import them directly into Studio. If this doesn't work, try a video converter application such as Virtualdub from **www.virtualdub.org** or AVS Video Converter from **www.avsmedia.com** (see screenshot 8).

## Internet

**Q** I've been trying to find an easy way of sending large files to my son. I can't do it with my email, and I don't want to try and set up an FTP server or use a virus-ridden PTP service.

I've found some software which is installed on 'one end' and then accessed from the other via the browser using a common directory for both up and downloads. It has some minor disadvantages, like both ends have to be on and it's not happy with routers.

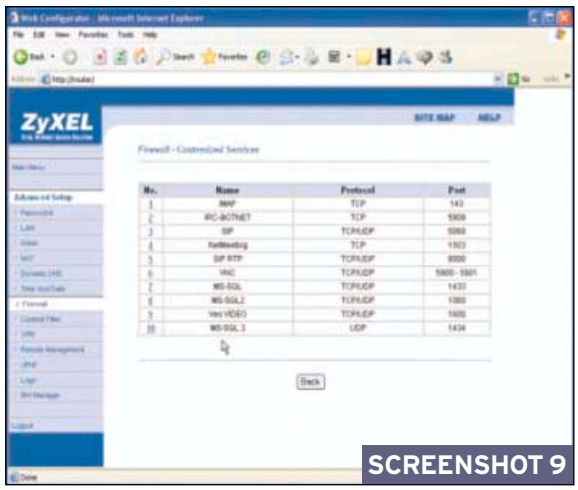
Does software such as this compromise the security of the PC it's resident on, and is there a better way of sending large files?

**Roy Houghton**

**A** As we suggested to a reader last month, a solution such as Foldershare will do the job. However, anything that's allowing connections to your computer is potentially a security risk, so you must make sure you have up-to-date virus software, and keep on top of any security updates for the program. If you can find out what port numbers the software listens on for connections from your son's PC, you should also configure your firewall to allow connections only from his IP address – though that will be harder if he has a dynamically assigned one (see screenshot 9).

Very often, though, we find the simplest way is to upload large files to your web space, if you got any with your net access. Use FTP to upload the file, and your son can download it with his web browser. He'll be able to do it whenever he wants, without being limited by the speed at which your PC can send information, and neither your computer nor his will need to be set up to listen for incoming connections from the Internet.

**You need to convert files from Video CD format before they can be burnt to a DVD**




**You can make folder and file sharing applications more secure by restricting access via your firewall**

**CONTACTS**

**All of our experts welcome your queries, simply respond to the appropriate address below:**

| | |
|---|---|
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| **Digital imaging & video:** | **digitalimaging@pcw.co.uk** |
| **Hardware:** | **hardware@pcw.co.uk** |
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| **Spreadsheets:** | **spreadsheets@pcw.co.uk** |
| **Visual programming:** | **visual@pcw.co.uk** |
| **Web development:** | **webdev@pcw.co.uk** |
| **Windows:** | **win@pcw.co.uk** |
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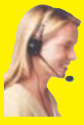

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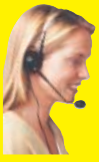

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**Gordon Laing**
has been a hardware enthusiast ever since his first Sinclair ZX80 and, as a former editor of *PCW* and contributor for over 10 years, what he doesn't know about technology isn't worth knowing

# Portable video on your PDA

## How to prepare video files so your PDA can entertain you on the move

Airlines have long known one of the best ways to pass the time on a long journey is by watching a video. Decent-sized personal screens are becoming the norm on long-haul flights and some forward-thinking companies even offer video-on-demand. We've never had it so good, but there's still a chance they won't be showing what you want to watch. And even if they are, what about your other journeys by train, boat, bus or in the back of a car? It would certainly be fun to watch video there too.

This is the reasoning behind the new breed of Portable Media Center (PMC) devices, which let you take your video collection and recorded TV shows with you when you are travelling. It's a tempting prospect for anyone who makes lots of long journeys, but there might be an alternative to splashing out on a new device. Just look at the current models out there such as Creative's Zen – does it remind anyone of a chunky PDA on its side?

While getting caught up in the hype of PMCs, it's easy to forget that PDAs have similar-sized screens and have long been able to play video files. Current PMCs may have the advantage of built-in 20GB hard disks, but it's possible to squeeze two hours of video onto cheap 256MB memory cards which slot into most PDAs. 1GB cards which can store eight hours worth of video material aren't that expensive either, and 4GB Microdrives are now available.

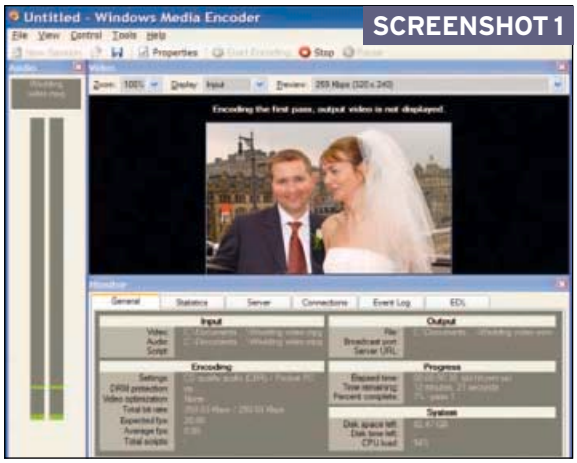
The PMC marketeers would then argue that their devices can play video for up to seven hours. That's quite impressive, but you could still expect three to four hours of video playback on an average PDA and enjoy a device that's smaller and capable of much more. If you needed another reason to use a PDA as a portable video player, consider this: the latest models with VGA screens offer double the resolution of standard PDAs and PMCs, allowing video quality which can be stunning.

But how easy is it to prepare video for use on a PDA? This month's column is devoted to the various means possible and their pros and cons. For tests I used Dell's top-of-the-range Axim X50v Pocket PC PDA which costs £243 from www.dell.co.uk. This has a 624MHz Intel X-Scale processor, integrated Wifi and Bluetooth, Compact Flash (CF) and Secure Digital (SD) memory card slots and a 3.7in VGA screen. It costs just about the same as a Creative Zen PMC, although for serious video playing times you'll also have to factor in the price of a memory card for the PDA. That said, a 256MB SD card can be bought for £15 ex VAT from www.crucial.com/uk.

**Turn a PDA on its side and you've got the makings of a powerful portable video player. The Dell X50v can even trump Portable Media Center devices by offering video playback at double the resolution**

Before going any further, it's important to be aware of copyright issues. This column describes how to encode your personal content which is free of copyright and protection. We do not condone or support the copying of copyrighted materials or the defeating of any protection schemes such as those employed by commercial DVD movies. Ripping DVDs, even for personal use, is different to ripping (most) CDs, as the former requires the illegal bypassing of decryption systems. To test the procedures I used a half-hour wedding video which had been captured by a PC and recorded onto its hard disk in the mpeg2 format.

**Microsoft's own Windows Media Encoder allows you to encode video in the wmv format for use on all PocketPC PDAs without the need for additional codecs**




### The big squeeze

When encoding video for use on PDAs, there are two main factors to consider. First and most obviously are the file sizes involved. Since most PDAs don't feature sufficient internal memory to store much video, you'll be limited by the size of an optional memory card.

As mentioned in the introduction, you should be looking at around 100MB per hour at standard PDA resolutions of 320 x 240 pixels. Anyone encoding at 640 x 480 pixels for PDAs with VGA screens should be prepared to devote around 400MB per hour. These are ballpark figures and will vary depending on the material and encoding options.

You'll also need a PDA with a memory card slot, but luckily this includes virtually every single model. The most common card format supported is SD, and prices have now fallen to pretty much the same as CF.

The second factor is the format of the compressed video. Things to consider here are the quality and efficiency of the format, not to mention compatibility with the media player on your PDA. For Pocket PC PDAs like the Dell X50v tested, the standard pre-installed Media Player unsurprisingly requires videos encoded in Microsoft's Windows Media Video (wmv) format. For ease of use I'll look at this first, although later you'll see there are often superior alternatives.

### Windows Media Video

The wmv format is the most obvious choice for video on Pocket PC PDAs, simply because the pre-installed Media Player software will open little else. Fortunately it's easy to encode video into the wmv format. Indeed Microsoft's Media Player 10 does it automatically when you synchronise a video file with a connected PDA.

In practice though I've not found this to be a very effective way of encoding wmvs. For example, TV shows recorded with a Windows XP Media Center PC using its native Dvr-ms format only ended up shrinking by around one-third. Considering these started off as mpeg2 files measuring hundreds of megabytes or even a few gigabytes, a compression of one-third wasn't helpful for use on a PDA. If you have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a Media Center PC and would like to encode shows into the wmv format, either to save space or for playback on a PDA, try the third-party DVR-MS 2 WMV utility from **www.thegreenbutton.com**. A superior way of encoding wmv files is with Microsoft's Windows Media Encoder (see screenshot 1). This can be downloaded free from **www.microsoft.com/windowsmedia**.

When you start Windows Media Encoder and choose the wizard to convert a file, it gives you the option of a 'distribution' optimised for Pocket PC PDAs. This wizard later lets you choose between Pocket PC Standard Video and Pocket PC Widescreen Video settings; I'd recommend the latter for any kind of video material as, despite its description, it uses the full 4:3 aspect, 320 x 240 resolution of standard PDAs, whereas the other mode is a lower quality option.

Using a 2.8GHz Pentium 4 system with 1GB of Ram, Windows Media Encoder took about 15 minutes to encode the 30-minute mpeg2 test video. The resulting 69.8MB file was copied onto an SD card, inserted into the Dell PDA and played without a hitch in Media Player. Windows Media Encoder can also create wmvs designed for use on a Windows Smartphone – choose the Windows Media Server (streaming) Wizard and later select the 58Kbits/sec encoding option.

## Encoding with DivX

While wmv is the first choice for encoding video for use on a Pocket PC, it's far from the most popular format for compressing video – the most widespread format used on a PC is DivX. Based on the mpeg4 format, it can produce great-looking video even with high compression. It's equally adaptable to higher bit rates too, should you have plenty of space on a memory card.

The first step in encoding DivX video is to download and install the free codec from **www.divx.com/divx**. The Pro version claims 30 per cent better compression than the standard free codec and is available for around £12. This DivX Pro codec also comes free with the company's own encoder software, Dr DivX, costing around £16. While DivX pro and Dr DivX are options worth considering, beginners to the format may wish to experiment with the free codec first.

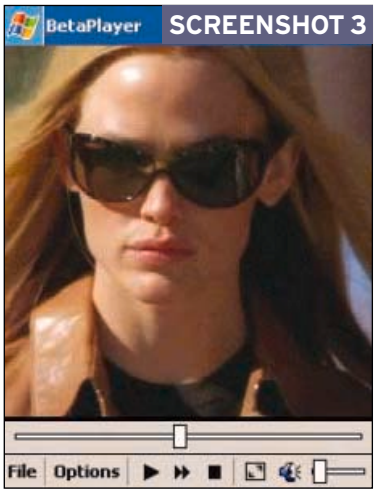
With this codec installed on your PC, you'll be able to watch DivX videos with Windows Media Player, and encode DivX videos with a third-party encoder. To play DivX files on your PDA you will require additional software, but more about that later. First the encoding process.

**One of the best tools for encoding video using the DivX format is Pocket DivX Encoder. It's even got a mode for PDAs with high-resolution VGA screens**

The Dr DivX software is an excellent encoder which includes preset modes designed for PDAs, but if your intention is to produce video for handhelds only, consider downloading a copy of the free Pocket DivX Encoder from **http://divx.ppccool.com** (see screenshot 2). Upon startup, this gives you the choice to optimise encoding settings for devices including Windows Smartphones, PocketPC PDAs and PalmOS Tungsten PDAs.

Once you've chosen your device, you'll be presented with a wealth of options. I simply browsed for the test file, told it where I wanted the output, then clicked the Direct Encoding button. Using these default settings, the 2.8GHz PC took about eight minutes to encode the 30-minute mpeg2 test file into a 60.1MB DivX avi. In order to compare times and quality I encoded both this and the earlier wmv file at 320 x 240 pixels and at 24 frames per second.

Microsoft's pre-installed Media Player on Pocket PCs doesn't understand DivX files and sadly there's no option to install a codec in the same way as you can with a Windows PC. The solution is to download and install an alternative media player for the PDA that comes with the DivX codec built in as standard. Probably the best DivX-equipped media player for Pocket PC PDAs is the excellent Betaplayer, which can be downloaded from **http://betaplayer.corecodec.org** (see screenshot 3). There's also a version for Windows Smartphones. Owners of PalmOS PDAs can download MM Player from **www.palmsource.com**.




**The standard Microsoft Media Player on PocketPC PDAs can't play DivX files and there's no downloadable codec to equip it. In order to play DivX files on a PocketPC, you'll need to download a new media player and one of the best is Betaplayer**

## The perfect portable

In terms of file size, the wmv and DivX avi files were pretty close, measuring 69.8MB and 60.1MB respectively. The wmv had the edge on initial convenience as I needed to install Betaplayer to play the DivX file. On the quality front the DivX file definitely looked better. There were fewer compression artefacts, resulting in a sharper and cleaner picture. It encoded faster too.

Where DivX really scored though was the ease with which I could encode a 640 x 480 video to exploit the higher resolution screen of the Dell X50v. Pocket DivX Encoder has a preset option designed for VGA PDAs and Betaplayer is happy to play the subsequent files. I re-encoded the 30-minute test video on the same 2.8GHz PC, which took just under 20 minutes and resulted in a 220MB file.

Playing the VGA video back in Betaplayer was a revelation. Most people are impressed to see smooth 320 x 240 video on a PDA, but the switch to VGA resolution was noticed by everyone I showed it to. The level of detail was excellent, and any compression artefacts were hidden by the small pixel size. Sure it required four times as much storage space, but if I owned a VGA PDA, I'd say it was worth buying larger memory cards.

One of the best aspects about Betaplayer was its support for the Intel hardware video accelerator in the Dell X50v. By offloading some work from the main CPU, power was saved and the battery life extended.

With the battery charged and the video looping on an older version of Betaplayer, the X50v managed to play for around three hours, 15 minutes. Recharging and switching to the latest version extended this playing time to just under four hours. I think I've found my perfect portable media centre, and it's not a dedicated Microsoft device.

**CONTACTS**

**Gordon Laing welcomes your comments on the Hardware column. Email him at: hardware@pcw.co.uk. Please do not send unsolicited file attachments.**



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**Gordon Laing**
has been a hardware enthusiast ever since his first Sinclair ZX80 and, as a former editor of *PCW* and contributor for over 10 years, what he doesn't know about technology isn't worth knowing

# Put your PDA through its paces

## Portables can be both over and underclocked – find out how

Here at the Hands on Overclocking column we may concentrate on pushing the speeds of desktop PC components, but that doesn't mean that portables are beyond a little encouragement. In theory any component with a clock frequency can be pushed in the hopes of gaining some additional performance, and this month we're looking at overclocking the Xscale processors of modern PocketPC PDAs.

As with overclocking any component though, you must understand you're pushing a part beyond the range where it is guaranteed to operate. Overclocking can result in erratic performance, reduced component lifespan and, in extreme cases, damage. Suffice it to say, overclocking will invalidate your warranty and we cannot be held responsible for any damage to your components. Proceed at your own risk.

### What's the benefit?

Disclaimer out the way, why would you want to overclock a PDA? After all, isn't portability about increasing battery life rather than potentially reducing it just to open your schedule faster?

The biggest reason for overclocking PDAs is that today they're much more than just personal organisers. Most are multimedia devices capable of playing video clips and fairly respectable games. Overclocking a PDA may potentially reduce its battery life, but could result in smoother playback of video or increased gaming frame rates.

Conversely if overclocking reduces battery life, underclocking has the potential to increase it. While most PDAs feature power-saving modes, it may be possible to clock their processors slower still to conserve power. It may result in sluggish performance, but could still be sufficient for many simpler tasks.

### Overclocking a PDA

So now you've got a reason to over or underclock a PDA, how do you go about it? After all, there are no easily accessible jumpers to switch or Bios settings to adjust. Fortunately a number of utilities are available which simply allow you to adjust the speed of the processor using a graphical slider.

**XCPU Scaler unlocks the dynamic scaling capabilities of Xscale processors used in modern PocketPC PDAs, allowing you to over or underclock them. Here the 624MHz processor of a Dell X50v is being overclocked to 728MHz**

One of the best for tweaking the speed of Xscale CPUs is XCPU Scaler 2004, from **www.immiersoft.com**. It unlocks the dynamic scaling capabilities of the Xscale CPU, theoretically allowing you to clock it between 100MHz and 728MHz, depending on the model. PDAs based on the PXA250 Xscale can be clocked between 100 and 500MHz, those on the PXA255 and PXA26x from 100 to 530MHz, while the current top-of-the-range PXA270 could be driven from 104 to 728MHz. The XCPU Scaler website claims speed increases of up to 35 per cent are possible on Quake benchmarks, while Ipaq 1910 owners may be able to double their gaming and video frame rates.

In practice it's certainly easy to use. First set your PocketPC's processor to maximum performance, thereby handing over control to XCPU Scaler. Then fire up the utility, enable the option to show higher clock speeds, drag the speed bar to the desired level and click OK.

### Benchmarking

I tested XCPU Scaler on a Dell Axim X50v PDA. This model has a high-resolution VGA screen and a PXA270 processor, which can officially be clocked at a maximum speed of 624MHz. With XCPU Scaler overclocking the processor to 728MHz, the unit felt a little quicker at opening and navigating programs, but how would it perform in more scientific benchmarks?

To test the PDA's performance I used the popular SPB Benchmark from **www.spbsoftwarehouse.com**. Like Sysmark for desktop PCs, SPB Benchmark runs a number of tests on applications, along with processor, memory, I/O and graphics speed. The full benchmark takes about half an hour and outputs an overall score, where 1,000 is the base for a Compaq Ipaq 3650 running at top speed.

With the X50v employing power-saving mode and its processor clocked at 208MHz, SPB returned a score of 831.09. Once set to its maximum official speed of 624MHz, the score leapt to 1,247.56. Using XCPU Scaler to overclock it to a maximum of 728MHz resulted in a slight increase to 1,266.16. All tests were done under battery power.

Since games, movies and applications were already running smoothly at the X50v's maximum official speed of 624MHz and SPB only revealed a mild increase at 728MHz, I saw no reason to overclock this particular PDA. I was, however, intrigued by the possibility of underclocking, in the hopes of increasing battery life. To put this to the test I encoded a video into a 320 x 240 DivX file (see this month's Hardware column on page 160) and used the excellent Betaplayer to loop it full-screen until the battery ran out; **http://betaplayer.corecodec.org**.

With the clip stored on an SD (Secure Digital) card, the fully charged X50v played for a fraction under four hours using Dell's standard power-saving mode of 208MHz. Once recharged and underclocked to 104MHz though, the X50v interestingly only played the clip for just over three and a quarter hours. I re-ran the tests with the same results.

A number of factors could have influenced this result, from the media format to the Betaplayer application itself. Ultimately it could simply be that Dell's built-in power-saving mode is more effective at conserving battery life than disabling it and manually underclocking the processor. I've certainly heard of people gaining longer battery life by underclocking PDAs and believe it can be successful, but just not with my particular combination. Clearly more tests need to be done.

In future issues I'll look more closely at encoding video for PDAs, weighing up the pros and cons of different memory card formats and clock speeds against potential playing times. In the meantime if you've had any experiences of over or underclocking PDAs, I'd love to hear from you.

**CONTACTS**

**Gordon Laing welcomes your comments on the Overclocking column. Email him at: overclock@pcw.co.uk. Please do not send unsolicited file attachments.**

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**Tim Nott**
is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family

# Eats, shoots and leaves

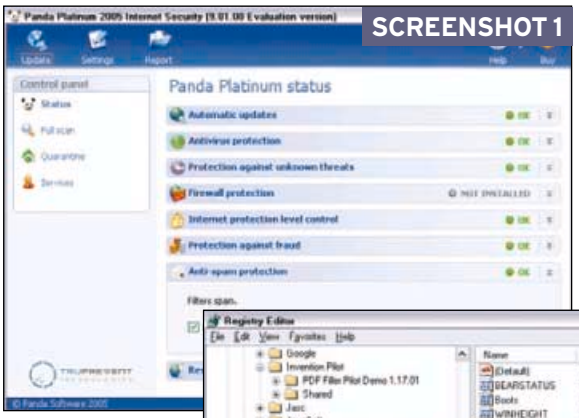
## How to make unwanted Panda software extinct, function key quirks and tuning up Opera

No, this isn't about how to use apostrophes, and this particular panda is no joke for a lot of users. Many have installed the Panda Platinum or Titanium Antivirus application and then found that it refuses to leave when they try to uninstall it from Control Panel. It still eats resources – producing anything from a phantom pop-up picture of a panda on close down, to error messages saying that a file (usually vcl50.bpl) can't be found at start up. To add insult to injury, some users have also found that they have to pay premium phone rates to get advice from Panda Software on how to uninstall it completely. So here's how to shoot it.

First, make sure you are logged on as an administrator in Windows XP or 2000 and create a System Restore point. Next, go to Start, Run, Msconfig and turn to the Startup tab. Uncheck any entries that contain Panda or PAV in the Startup Item or Command lists, then restart the PC, again logging in as an administrator if applicable. Start, Run, Regedit and highlight the top of the tree – My Computer. From the Edit menu, choose Find, then type 'panda' (without the quotes) in the 'Find what' box. Run the search and delete all references to 'panda' (unless they occur in a search history or MRU list), pressing F3 after each deletion to find the next instance. When there are no more references, repeat the process for PAV.

Having deleted all the Registry entries for Panda and PAV, you can then close the Registry editor. Next, go to Control Panel, Folder Options, View and make sure 'Show hidden files' is checked and that 'Hide protected operating system files' is unchecked. Now you can delete the Panda software folder which, by default, will be under Program Files. You should also delete the following files from Windows\System or Windows\System32 – PAV.SIG, APVXD.VXD, APVXDUT.VXD, PANDA.CHP. Restart the PC and Panda should be extinct.

Just to show we aren't afraid of braving such risks on our readers' behalf, I uninstalled my usual anti-virus application (Antivir from www.free-av.com) and installed a trial version of Panda Platinum edition (see screenshot 1). I was able to uninstall this from the Control Panel without any problems or after-effects, but it did leave several Registry entries behind (see screenshot 2). Finally, when installing any new software – especially trial versions or those with limited support – do as I did and create a System Restore point first.




**Above: The Panda Platinum trial version...**

**Right: ...leaves pawprints in the Registry after uninstalling**

### Key change

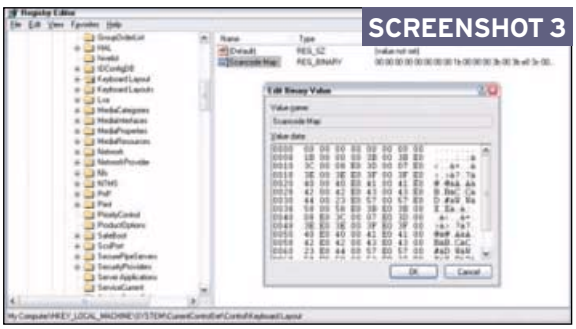
As mentioned in this month's Word processing column on page 170, it's a source of bafflement as to why keyboard manufacturers, including Microsoft, produced 'enhanced' keyboards whose function keys default to non-standard Windows and Office commands. So, for example, you press F5 to refresh a folder and find this has been remapped to an 'Open' command. The really annoying thing is that this 'feature' is hard-wired into the keyboard, so there is no Control Panel option to disable this. And if you think I'm being harsh, then you should read the comment at www.udolpho.com! Sure, it's easy enough to hit the F Lock key to revert to normal, but unless you are well organised you won't remember to do this until you once again encounter the moment when a function key fails to respond.

A further irritation I've found is that having pressed the F Lock key to restore normal behaviour, Alt & Print Screen fails to capture the image of the active window to the clipboard, and I have to press F Lock again to rectify this – and hence return to the non-standard mappings.

Last time we looked at this problem, back in September 2003, we mentioned it was possible to edit the Windows XP or 2000 Registry to map the F Locked keys to their conventional counterparts and vice versa, thus reversing the behaviour of the F Lock key (see screenshot 3). We also mentioned that Jason Tsang has done all the hard work, and you could download a .reg file that would merge the required settings into the Registry. This is still available, and comes with an 'undo' .reg file and read me file. You'll find it at www.mvps.org/jtsang/flock.html.

Since our first mention, Jason has produced alternative versions that take care of the Print Screen key on 'second generation' Microsoft products such as the Multimedia, Natural and Wireless Optical keyboards – you can flip the Print Screen key to act normally with the standard function keys, be always set to Print Screen or always set to Insert.

There's also a rather more versatile utility available, called 'I Hate This Key Deluxe Edition' which certainly doesn't mince words. This also deals with pet hates such as the Windows logo key (which can disrupt games if pressed), the Caps Lock key, which has long been a problem, and the




**Jason Tsang's .reg file can map locked keys so function keys respond properly**



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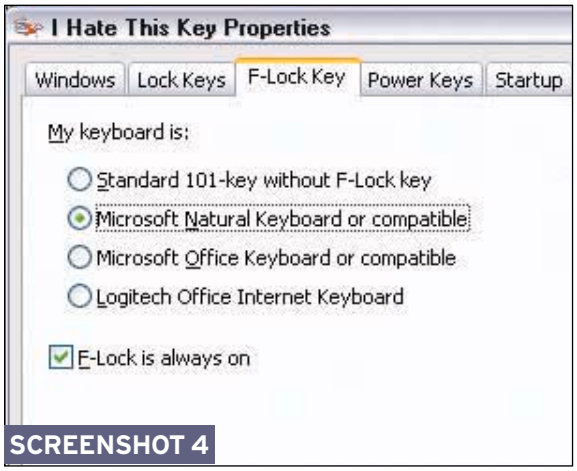
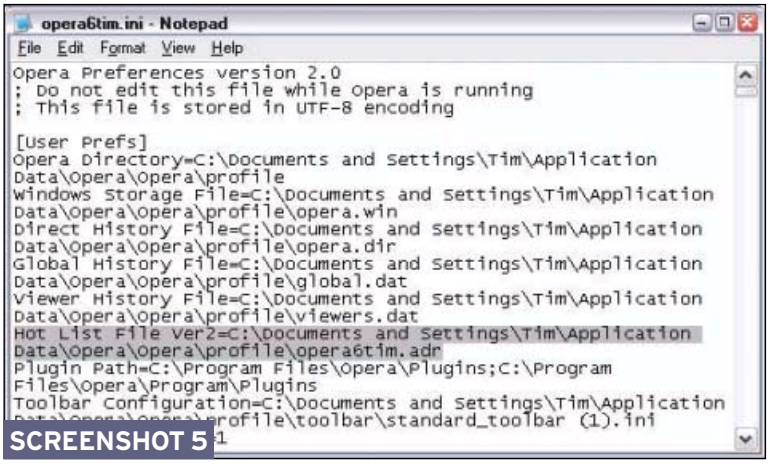



SCREENSHOT 4




SCREENSHOT 5

Sleep and Power keys which, as the documentation explains, are sometimes 'in very unusual places'. I Hate This Key costs $9.95 (£5.33) from **www.bytegems.com** and you can get a free seven-day trial.

So there are two solutions to the problem. I like Jason's approach as it's not only free but doesn't use any resources, though you may prefer the added power of IHTK, which needs to load at start-up and, according to my XP Task Manager, is occupying 12MB of memory (see screenshot 4).

## Feedback

Further to March's exposé of the Windows Briefcase, I have to thank Ray Kennedy for pointing out that you can also create a new briefcase on the Desktop by typing 'syncapp' in the Start, Run box. Curiously, this will have the name 'My Briefcase' rather than 'New Briefcase' which is what you get from right-click, New, Briefcase. It works in Windows 2000, too.

Regular correspondent Vivian Dunn notes you can drag entire folders into the briefcase, and their contents will also be synchronised, but points out a nasty gotcha. If you delete a file from one of the PCs, next time you synchronise the briefcase on that machine, the file will be deleted from the briefcase as well and, in turn, when you synchronise on the second machine, the file will again be deleted. This may not be what you want. Files that are to be deleted are marked with a red cross, but this may be scrolled out of the window and you don't get a confirmation dialogue. The deleted files should still be in the recycle bin on the first PC, but this isn't something to rely on.

The correct way to remove a file from one PC and not the other is to first select the file in the Briefcase, then go to the Briefcase menu and 'Split from original'. This will stop it being updated or updating other copies.

## More Operatics

March's piece on customising the Opera browser's search boxes brought forth an interesting comment from Brian Sheldon. As well as the search.ini file there is an opera6.ini file, which is used to store visual and other settings, the location of bookmarks, history and cache and more. By default, you will find this in the opera7\profile folder or, if you have multiple users, in the Opera section of the user profile – in XP this would be C:\Documents and Settings\<your_name>\Application Data\Opera\Opera\profiles. There is, however, no reason you can't have more than one of these .ini files to suit different occasions.

The easiest way to implement this is to open the opera6.ini file in Notepad, then save it as, say, opera6tim.ini. Repeat the process for opera6.adr, which is the bookmark file. You can then edit these files directly in Notepad, as the entries are self-evident. However, it's probably easier – and less accident-prone – to do this in Opera.

First you do need to change one line in opera6tim.ini (you don't have to use my name) so the line starting 'Hot List File…' points to opera6tim.adr (see screenshot 5). Having done this, save and close any open .ini files, then create a new shortcut to Opera.exe. Give this a distinguishing name, then right-click on it and select 'Properties'. After the command for "<path>\opera. exe" add the following:

```
/Settings ↙
"<path_to>\opera6tim.ini"
```

*(Key: ↙ code string continues)*

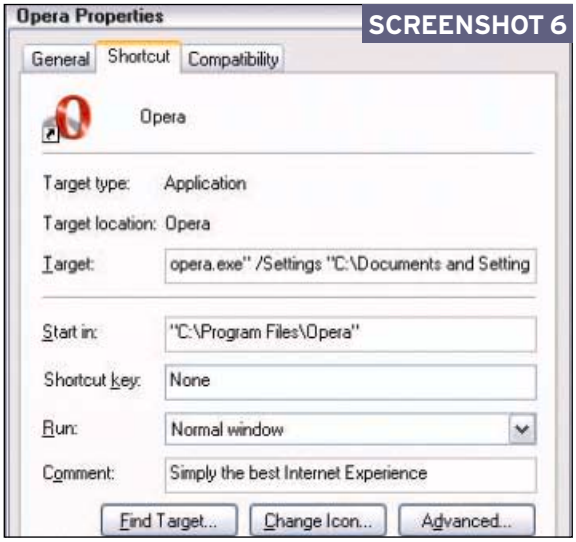
replacing <path_to> with the location of your custom .ini file and making sure there is a space before the forward slash (see screenshot 6). Close the shortcut properties. You will then be able to start Opera from the new shortcut, make changes to the interface and preferences, organise your bookmarks and so on. These will be stored in the custom .ini and .adr files, but won't affect the originals. This way you can create unlimited custom versions of Opera, each of which can be started from its own shortcut.

While we're on the subject of Opera, Mike Elliot installed the program from the March CD, but he can't make it dial out to establish a connection when off-line, so has to start Internet Explorer or Outlook Express first, open Opera then close IE or OE. The answer is that Opera doesn't have a built-in dialler, and doesn't pass a request to the Windows dialler. However you don't need to start IE or OE – drag a shortcut to your default dial-up connection onto the Desktop or Quick Launch bar and use that to connect before launching Opera.

**Above left: Take control of your keyboard with I Hate This Key**

**Above right: Creating a custom Opera bookmark file requires a code change**

**You'll be able to start Opera from this new shortcut**




SCREENSHOT 6

**CONTACTS**

**Tim Nott welcomes your comments on the Windows column. Email him at: win@pcw.co.uk. Please do not send unsolicited file attachments.**



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**Barry Shilliday**
has worked with computers for almost two decades. By day, he is a Linux and Unix consultant, but in his free time prefers to travel the world – and snap it with his camera

# Make way for movies

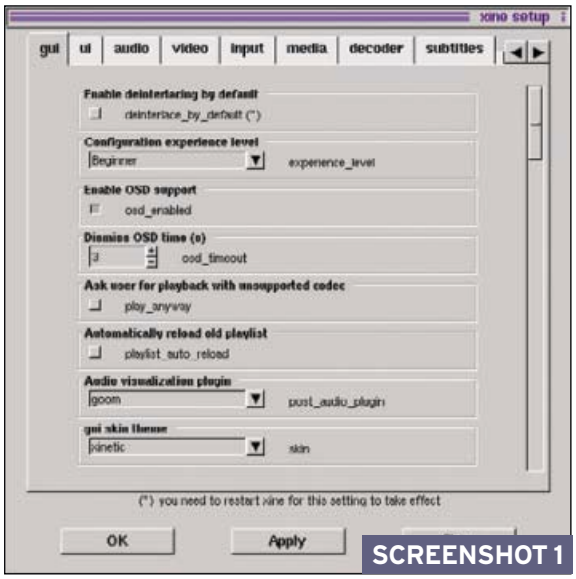
## Find out how the Xine project can help you play DVDs and other video files on Linux

DVD playback on Linux has, for a long time, been troublesome; no distributions support it on a plain install. This month we're going to see how it's possible to get Linux to play not only DVDs, but the majority of video files available. There are several ways to go about this, but we're going to concentrate on the Xine project (**www.xinehq.de**).

The lack of support isn't due to Linux's ability to show DVDs, but instead to the uncertain legal situation of decrypting DVDs in order to watch them. On a CD, the digital audio is in a simple uncompressed format, similar to the wav file format. On a DVD this isn't the case: the video is encrypted, and therefore requires decrypting software before you can even read the data properly. Since no such software has ever been made available for Linux, it prevented people from legitimately watching DVDs they'd purchased, on their own computer.

It wasn't long before the encryption was hacked (it turned out to be incredibly poor encryption), and dvdcss emerged. The Norwegian programmer who developed the dvdcss code was prosecuted as a result of pressure from the US film industry, but the prosecution was unsuccessful. There was an appeal against the decision, which was also unsuccessful. This is good news for the open-source world, as it means people are more willing to use and distribute the dvdcss decryption code without fear of legal retribution. The Xine project can make full use of this code and therefore play back any DVDs you like. What's even better news is that region encoding doesn't have any effect, so your Linux PC becomes a good multi-region DVD player. So, with the background out of the way, it's time to get Xine installed.

Long-term readers may remember us looking at Xine in this column a couple of years ago. Back then, installation was tricky, but feedback from readers seemed to indicate that it was worth the trouble. A lot of things have changed since then, fortunately for the better. One major difference is that Xine is finally out of its pre 1.0 releases, and has had a complete rewrite in terms of internal structure. Of course there are lots of great new features, but installation is also a lot simpler.




SCREENSHOT 1

**Xine's configuration panel pops up when first run**

## Xine structure

Xine consists of two parts: a library back end, and a GUI front end. As you'll see, the front end is optional. The back end is where all the work takes place; it's where the support for all the various video and audio formats is included, and where these are decoded ready for display. These formats are too numerous to list in full, but include mpeg2, mpeg4 (such as DivX), DV, Windows Media, and audio formats including mp3, Dolby Digital, aac, Ogg Vorbis and wma. The Xine back end can also make use of Windows binary DLLs, enabling support for many extra proprietary formats such as Real Media and WMV 9 (on 32bit platforms only). A more complete list can be found on the Xine website.

Some recent distributions already come with Xine, and will therefore play back all these formats. The main exception will be encrypted DVDs; so if you're happy with the version installed, skip to the dvdcss section.

**Xine's front-end GUI with its standard look**

It's likely that the installed version of Xine will be an older beta release, so you might want to upgrade to the latest version. Also note that some versions of Suse Linux come with a modified version of Xine which is hard-coded not to play DVDs; upgrading is certainly worthwhile here. If you want to upgrade, it may be advisable to uninstall the current version first.

You can install Xine from source or precompiled binary files, depending on the Linux distribution you're using. Fedora Core binary packages are available at **www.freshrpms.net** (xine-lib and xine), and Mandrake packages can be found at **http://plf.zarb.org** (libxine1 and xine). Both these sites contain lots of other useful pieces of software that the distributions left out. For installation from the source, download from **www.xinehq.de**, or if you've bought the DVD edition of *PCW*, copy the archives included on this month's cover disc.

As usual, installation from the source is straightforward, but requires all the development tools. If you get any errors, make sure you have all the necessary compiler and development packages installed. First, extract the Xine back end:

```
# tar xfvz xine-lib-↙
1.0.tar.gz
# cd xine-lib-1.0
```

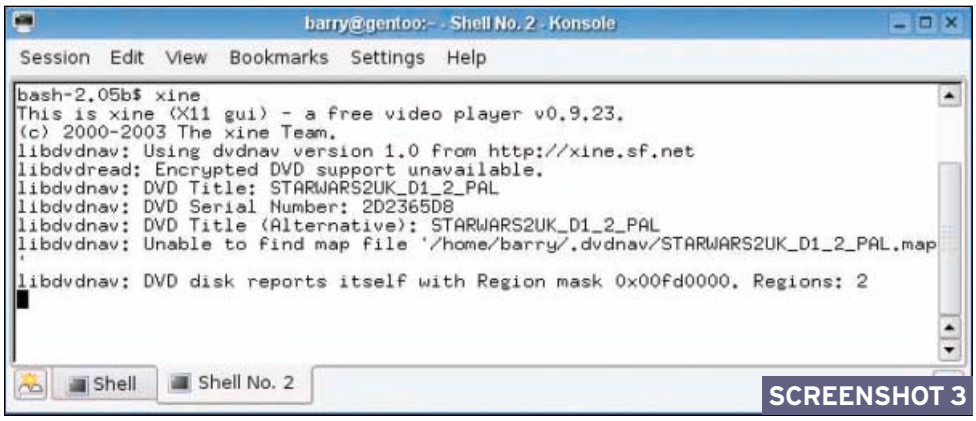
*(Key: ↙ code string continues)*

There are many configuration options, but the defaults should be fine:

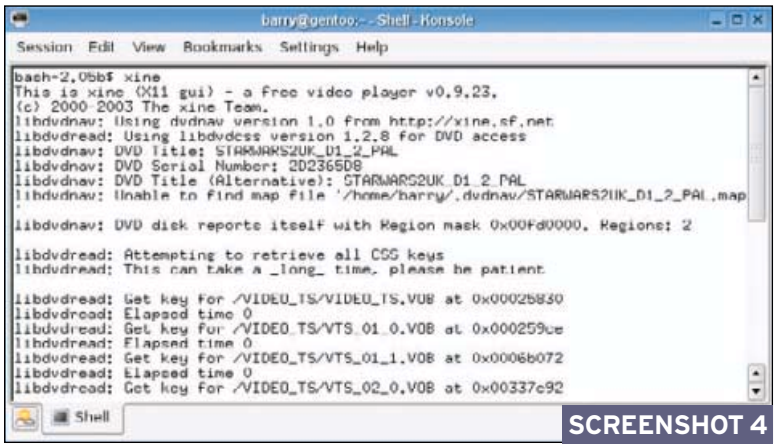
```
# ./configure
# CFLAGS="-O2 -↙
march=athlon-xp" ↙
./configure --↙
prefix=/opt/xine
```

In these two examples, the first performs a default configuration, and the generated binary files will be copied to /usr/local. In the second, we're optimising the compile for an Athlon XP processor and choosing to install into /opt/xine. By installing into a separate area, you can install

SCREENSHOT 2



SCREENSHOT 3



SCREENSHOT 4

**Above: Without libdvdcss you cannot read a video DVD**

**Left: Decrypting a DVD successfully with Xine**

more than one version of Xine on the system; but you should only do this if you're confident that you know what you're doing. Once that is done, build and install the software in the standard way:

```
# make
# make install
```

Next, download, extract and build the front end in the same way. At the time of writing this was xine-ui-0.99.3. The Xine library back end must be installed before attempting to compile the front end; it will certainly fail without it.

Having installed the Xine components, if you want to watch DVDs, you'll need to make sure that there's a symbolic link to your DVD device. Almost all distributions will have done this already for you during installation. You can check for the link by running ls as follows:

```
# ls -l /dev/dvd
```

The output should be something like '/dev/dvd -> hdc'. Although it's unlikely to be necessary, if you need to create a link, you can do so in the normal way:

```
# ln -s /dev/hdc /dev/dvd
```

The simplest way to confirm the device name of your DVD drive is by running the 'dmesg' command. For example, on our test PC, running 'dmesg | grep DVD' returns 'hdc: PLEXTOR DVDR...'.

## Running Xine

Start up the Xine front end by entering 'xine' at the shell prompt. Alternatively, in KDE, press Alt & F2 to bring up the 'run command' dialogue, and enter xine there. The first time you run the front end, a configuration window pops up. It's doubtful you will need to change anything now, so just click OK (see screenshot 1). Next, a video window with the Xine logo appears, together with the default front-end GUI (see screenshot 2). At this point you should be able to play most of the video and audio files Xine supports.

If you have a DivX video file handy, load it into Xine (right-click on the video screen and select Open). You can also play a video file back directly by using its name at the command line (for example 'xine /tmp/vid.avi'). There are various keyboard shortcuts to control the interface: press the 'g' key to toggle the GUI's visibility, and the 'f' key to toggle full-screen mode. Press 'q' to quit the GUI. The man page has full details of all of the options and shortcuts.

If you insert a DVD and click on the DVD button on the GUI, you'll have less luck. At most you will be presented with the DVD's menu, but it is more likely that you will receive only an error. When Xine is run from a shell, you will see something similar to what is shown in screenshot 3. The Xine GUI first reports its version, and upon attempting to access a DVD it runs the appropriate plug-in, libdvdnav, which reports that there's no support for encrypted DVDs. The plug-in is able to detect the missing dvdcss code at run-time – there's no need to install it before Xine. Without it, the plug-in reads the disc title but is unable to get any further.

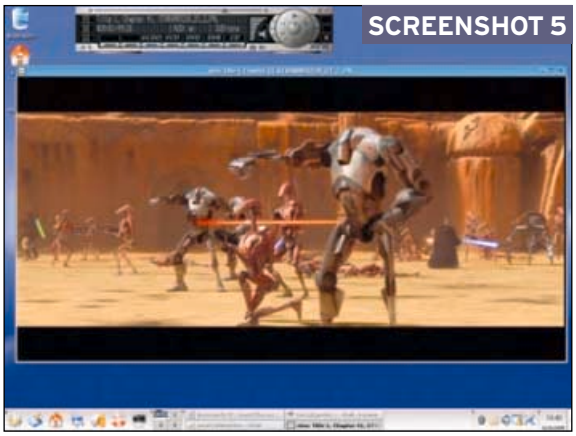
The required library is libdvdcss. We have not provided this on the cover disc, but you can download the source code from **http://developers.videolan.org/libdvdcss**. Once again, binary versions exist for many distributions, and you can find these at Freshrpms and PLF for Fedora Core and Mandrake respectively. Compiling from the source is simple enough: just extract and build in exactly the same way as above; no special options are needed.

Once installed, try clicking on the DVD button again; this time you will see results similar to those in screenshot 4. Everything looks a lot healthier now. As before, the disc title is read, but this time libdvdcss is employed to retrieve the encryption keys needed to read the video. Despite the warning, this process takes just a couple of seconds on any modern PC. The messages below are just for information: each video file on the DVD (for example, main title and bonus material) is processed in turn. The 'Vob' format is the video format used on DVDs. See screenshot 5 for the final result.

## Xine improvements

The default look of Xine's GUI isn't that appealing. As with many media players, Xine supports changeable skins. You can download these from within the GUI itself. Right-click and select Settings -> Skin Downloader. This connects to the Xine server to retrieve a list of skins. Just click on a name to get a preview, or 'Load' to change. Screenshot 6 shows the 'Galaxy' skin, designed by Mandrake

**Xine in action; make it full-screen with one key press**


SCREENSHOT 5



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to complement its own KDE theme of the same name; the skin is just a visual theme, and so this one doesn't require Mandrake, or even KDE.

As mentioned above, Xine can use Windows DLL files to extend its supported formats. Since these DLLs are in 32bit format, Xine must also be compiled as 32bit code. For AMD64 users, if you're running a 64bit version of Linux, Xine is probably already compiled as 32bit for this reason. Those with other CPUs don't need to worry, since the system will be fully 32bit already.

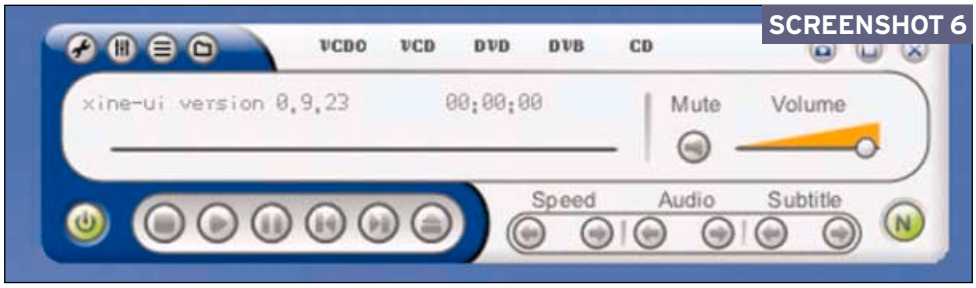
By default, Xine looks in the directory /usr/lib/win32 for these Windows DLLs. Rather than searching through your Windows partition, you can download a useful package of all the common DLLs from **http://www1.mplayerhq.hu/homepage/design7/codecs.html**. The codecs are provided for Mplayer, which is an alternative video player to Xine, but they work just as well with Xine. As the web page explains, download the 'essential' package to add support for WMV9, Real Player and Quicktime video. The download is around 9MB in size. Extract the archive in the normal way and move the directory created (essential-20050125, in this example) to /usr/lib/win32:

```
# tar xfvj ↙
/tmp/essential*tar.bz2
# mv essential-20050115 ↙
/usr/lib/win32
```

## Other front ends

The Xine library is responsible for handling video code and reading from devices. The front end is there only to display the results. Because of this split architecture, there are several different front ends that work with the Xine library. There's 'Totem' (**www.hadess.net/totem.php3**), which integrates into the Gnome desktop and provides other utilities, such as a webcam viewer. For the KDE desktop there is Kaffeine (**http://kaffeine.sf.net**); this is a full media player for KDE, and uses the Xine back end library for video playback (see screenshot 7). Additionally, if KDE itself is built with Xine support, the standard media programs such as kaboodle will be able to play back all Xine-supported formats, and Konqueror can show thumbnail previews of videos in its file browser.

SCREENSHOT 6



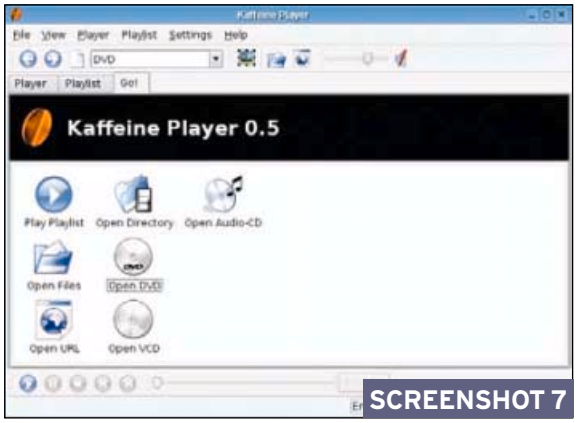

**Mandrake's Galaxy skin for the Xine front end; many more are available**

As Xine understands most audio formats, it's also possible to use it as a dedicated audio player, though the standard front end is a bit clunky for that purpose. We looked at Amarok (**http://amarok.kde.org**) a couple of months ago. This media player can use the Xine library as its engine, allowing you to play almost all audio files transparently.

## Mp4 format

Jason Dowling from Dublin has asked whether Apple's mp4 audio format is supported under Linux. The simple answer is yes: Xine will play mp4 audio files without any problem. However, the more complicated answer needs a little explanation.

**The Kaffeine media player for KDE uses the Xine library for video playback**




SCREENSHOT 7

Unlike mp2, mp3 or aac audio, mp4 is not a compression format at all. Instead it's a container format that simply holds audio and video; a sort of multimedia plastic bag. Its name is therefore rather misleading, implying it is an improved or next-generation version of mp3. Typically an mp4 audio file (as generated by Apple's Itunes, for example) will contain aac audio, although it's equally possible for an mp4 file to contain mp3 sound.

There are two open-source software packages for dealing with aac sound specifically. These are faac and faad2 (**www.audiocoding.com**). The former encodes to the aac format and the latter decodes. For both encoding and decoding, the utilities understand standard aac files and mp4 files that contain aac audio.

To encode a wav file to aac, use the 'faac' utility. If the output name has an mp4 extension, faac automatically puts the resulting aac sound into the mp4 container. If you want to play these files with Itunes or an Ipod, they will need to be in the mp4 format. You can also use options such as --artist and --title to specify extra tag information. Run 'faac --help' for more details and options.

```
$ faac music.wav -o ↙
music.mp4
```

To decode an aac file, use the 'faad' utility. By default, faad writes a wav format audio file:

```
$ faad audio.mp4
```

Here the file 'audio.wav' is created. Since aac is a lossy compression format, the resulting wav file will be lower quality than the original audio, and equal quality to the aac file it comes from. Aac is generally considered higher quality than mp3 at a given bit rate, but is supported on few portable music players – the Apple Ipod being the obvious exception.

## DVD playback on Fedora Core 3 in two easy steps

**Using the binary packages on freshrpms.net, you can get DVD playback working on Fedora Core 3 in just a couple of minutes.**

**1) Download the Xine library and front end from http://heidelberg.freshrpms.net. You will also need some dependent packages. These are aalib, libdvdcss, libfame and libXvMCW. The i386.rpm files are 32bit. We've provided all of these on the cover DVD (except for libdvdcss); more recent versions may be available on the freshrpms website.**

**2) Install each of the packages with the 'rpm -Uvh' command.**

**Xine is automatically added to the Fedora menu, so you can run it immediately; alternatively enter 'xine' from a shell window.**

**CONTACTS**

**Barry Shilliday welcomes your comments on the Linux/Unix column. Email him at: linux@pcw.co.uk. Please do not send unsolicited file attachments.**



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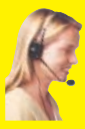

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TYM75/IN55(PCW/05)

**Tim Nott**
is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family

# Top of the form

## Form filling made easy, and why freelance formatting and function keys cause problems

One of the more onerous duties of a citizen is filling in forms: for tax, passport applications, insurance quotations and so on. The list – and the tedium – is endless. Fortunately, the first step – getting a copy of the relevant form – has been made a lot easier by the facility to download these from the relevant website. Indeed, you can sometimes dispense with a paper form altogether by filling one in online – the UK Inland Revenue provides such a service for most tax and benefit forms. This can be less than optimal, however, if you don't have unlimited Internet access and you want to take your time, checking the form and maybe printing out a draft.

Another alternative is to download the form as a pdf, print it out, then fill it by hand. Which seems rather a retrograde step, and if your handwriting has atrophied as much as mine, you may well make a mess of it. Reader David Else brought this shortcoming to our attention, pointing out that it was possible to fill in the search form on 'Personal Computer World on CD' (our disc containing back issues of *PCW*), and print it out, and wondered if there was a freeware solution for doing this on all pdfs.

It is possible – and has been since Acrobat 4 – to create forms that can be filled in using Acrobat Reader itself. However, enabling this facility seems to be beyond the capabilities of bodies such as the Inland Revenue – though US taxpayers are able to get hold of fillable forms.

We haven't found a free program, to enable this for any pdf form, but you might like to look at PDF Filler Pilot. This adds its own printer driver to Acrobat Reader. Run PDF Filler Pilot, then open the relevant form in Acrobat Reader and 'Print to…' the Filler Pilot driver. The form will then appear in the PDF Filler Pilot where you can fill it in (or annotate other documents) then print it out on a normal printer (see screenshot 1).

There are various versions, starting with the Home edition at £16.40 ex VAT, available from **www.btsoftware.com/products/formph.htm** and you can download a trial version from there, or the developer's site at **www.colorpilot.com/pdffiller.html**.

SCREENSHOT 1

**Fill in any pdf form with PDF Filler Pilot**

## Another annoyance

Regular readers will know we are firm believers in using styles in any word processor, rather than haphazardly applying individual formatting, However, it's not an obsession and it's perfectly correct to use the occasional piece of character or paragraph formatting such as bold, italic or an indent without setting up a style. However, Word 2002 and 2003 overreach themselves here, by adding such formatting as a pseudo-style in the dropdown list on the formatting toolbar.

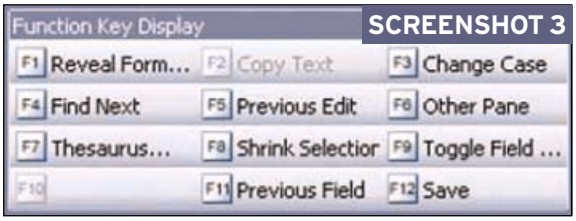
For example, sticking a tab in front of a line of normal text will add 'Normal + First line: 1.27 cm' to the list. After a few pieces of freehand formatting, the regular styles in the list get harder and harder to find. This has been bugging me for some time, and by chance this month I found the answer.

If you open the Styles and Formatting Task Pane – something I prefer to avoid – you will find that if you change the contents of the 'Show' box at the bottom from 'Formatting in use' or 'Available formatting' to 'Available styles' all the piecemeal formatting disappears from the list. If you want to be even more ruthless, you can select the 'Custom…' option and deselect the styles you never use. This, at last, let me get rid of 'Envelope Return Address' from the 'Hands on Word processing' template which has been resident since I last tampered with it, probably in March 2002. And yes, I do realise I could have done this with the Organiser, but I never got around to it.

**The normal function key toolbar (top) and the way it looks when you press Shift (bottom)**

SCREENSHOT 2

SCREENSHOT 3




## A private function

Word can do some great things with the function keys (F1-F12) that can't be achieved through the menus. One we covered fairly recently is the use of Shift & F5 to go back to the last editing point. This also works after closing and re-opening a document, so you can return instantly to where you left off in a document. If you find the function keys don't perform correctly, then you probably have one of those clever keyboards that remap these keys to non-standard commands.

I've seen this on both Logitech and Microsoft keyboards – for example, F5, which should launch the 'Go to' dialogue in Word or insert the date and time in Notepad, is re-assigned to 'Open': although in fact this does nothing on my machine. I've never seen the logic of this, but pressing the 'F Lock' key will restore the conventional assignments, and Windows XP and 2000 users will find a way of bypassing this in this month's Hands on Windows.

There is another secret weapon available to serious function key users in Word 2000 and later – the function key toolbar. You won't see this under View, Toolbars, but if you take a further step to View, Toolbars, Customize, you can turn it on from the toolbars tab. The best thing about this is it describes the commands of each F-key, changing when you press Control, Alt or Shift (see screenshots 2 and 3). So if, like me you can never remember which F9 combination updates a field and which inserts a new one, this can be very useful.

**CONTACTS**

**Tim Nott welcomes your comments on the Word processing column. Email him at: wp@pcw.co.uk. Please do not send unsolicited file attachments.**



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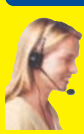

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TYM74(PCW/05)N25

**Stephen Wells**
is a freelance journalist and a regular contributor to computer magazines. He's been writing *PCW*'s Spreadsheets column for over 10 years. A US citizen, he now resides on the Essex coast

# Find the right combination

## Simple solutions to managing awkward problems using a spinner and Autofilter

Michael Hollis sent me a neat solution for young children who give change in a school shop (see screenshot 1). The sale is entered using a spinner. The amount tendered is typed in, and his Excel worksheet calculates the change due and works out the most efficient combination of notes and coins to give to the customer. So if the sale is for £5.52 and the customer offers £20, the change is £14.48, which is most efficiently provided with a £10 note, four £1 coins, two 20p pieces, one each of 5p and 2p, and a penny.

To add a spinner, display the Forms toolbar, click on the spinner icon, then draw a rectangle in a cell. Right-click on the spinner, choose Format Control and, under the Control tab, enter a cell address in the Cell link box. This can be any cell away from the used range as it simply holds the number which the spinner raises or lowers. Let's say you use cell K10.

The sale price in cell C3 is raised or lowered by a penny with each movement of the spinner, so C3 has to hold the formula:

```
=$K$10/100
```

The amount tendered is entered in C4. C5 has the formula:

```
=MROUND(IF(C3>C4,"Not enough",C4-C3),0.01)
```

*(Key: d code string continues)*

This displays the amount to be given in change, or 'Not enough' if the sale is for more than the amount tendered.

Column E contains the face amounts of the notes and coins from £50 down to a penny. Column G keeps track of the amount of change left to be given. In cell G4 is:

```
=ROUND(C5-E4*F4,2)
```

The ROUND and MROUND functions are necessary because the division by 100 in C3 would otherwise create inaccuracies. In G5 is the following:

```
=ROUND(G4-E5*F5,2)
```

and this is dragged down to G14.

Column H has a cross-check keeping track of change given so far. Enter:

```
=F4*E4
```

into H4 and drag down to H14. Cell H15 contains:

```
=SUM(H4:H14)
```

to total the amount of change given.

Finally, in cell F15 is:

```
=IF(C5=H15,"OK","Error")
```

This either confirms the correct change has been calculated or indicates an error.

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | Change Calculator | | | | | |
| 2 | | | | | | |
| 3 | | Total sale | £5.52 | | Notes Coins | Number |
| 4 | | Amount tendered | £20.00 | | £50 | |
| 5 | | Change | £14.48 | | £20 | |
| 6 | | | | | £10 | 1 |
| 7 | | | | | £5 | |
| 8 | | | | | £1 | 4 |
| 9 | | | | | 0.50 | |
| 10 | | | | | 0.20 | 2 |
| 11 | | | | | 0.10 | |
| 12 | | | | | 0.05 | 1 |
| 13 | | | | | 0.02 | 1 |
| | | | | | 0.01 | 1 |
| | | | | | | OK |

**SCREENSHOT 1**

| | A | B | C | D |
|---|---|---|---|---|
| 1 | Date | Contributor | Gender | Contribution |
| 2 | 24/3/05 | Sam | (All) | £ 25.00 |
| 3 | 31/3/05 | Sid | (Top 10...) | 35.00 |
| 4 | 7/4/05 | Val | (Custom...) | 10.00 |
| 5 | 14/4/05 | Art | F | 5.00 |
| 6 | 21/4/05 | Bob | M | 15.00 |
| 7 | 28/4/05 | Dot | (Blanks) | 40.00 |
| 8 | 5/5/05 | Gus | (NonBlanks) | 15.00 |
| 9 | 12/5/05 | Iris | F | 25.00 |
| 10 | 19/5/05 | Meg | F | 30.00 |
| 11 | 26/5/05 | Pam | F | 25.00 |
| 12 | 2/6/05 | Peg | F | 15.00 |
| 13 | 9/6/05 | Ron | M | 20.00 |
| 14 | 16/6/05 | Sam | M | 10.00 |
| 15 | 23/6/05 | Sid | M | 5.00 |
| | | Val | F | 25.00 |
| | | | | £ 300.00 |

**SCREENSHOT 2**

**Top: Change of £14.48 is split into the best combination of notes and coins**

**Bottom: Autofilter can analyse a list of contributors**

As there is no need to view G and H, they can be given a width of 0.

### Help with our enquiries

If you have a list, say, of contributors, stating whether they are women or men, their contributions, and the dates of their contributions, you can quickly analyse it using the Excel Autofilter (see screenshot 2).

In this example, 15 contributions have been made, but bear in mind you could do this with a list of hundreds of entries. Cell D17 has

```
=SUM(D2:D16)
```

and the total from all contributors is £300. To find out how much Sam has contributed, click on the arrow in B1 and choose Sam. His two contributions, of £25 and £10, are now the only ones displayed. But if you use the SUM function to total them, £270 will be displayed. The SUM function will include the other contributions made between his two contributions. Fortunately, Excel has an answer. Choose the cell under Sam's two displayed contributions and click on the Autosum tool, and that will enter the Subtotal function. The arguments are:

```
=SUBTOTAL(9,D2:D16)
```

The 9 simply means SUM. If you used 1 instead, the Subtotal function would give the average, which, in Sam's case, is £17.50.

Click the arrow in B1 again and choose All to display the full list. Supposing you want to find out how much was contributed in April this year. Click the down arrow in A1 and choose Custom. The custom Autofilter dialogue box appears. Leave the default And button selected. There are four boxes. Using the down arrows, choose in the first box, 'is greater than or equal to'. In the second box pick the first available offered date in April, 7/4/05. In the third box choose, 'is less than or equal to', and in the fourth box choose 28/4/05. Click OK and four entries are displayed. Click the Autosum tool under the contributions, with the same arguments as before, and the total is displayed: £70 was contributed in April.

You can also do searches within searches. Show all the list, then repeat the date filter above, except change the fourth box entry to 26/5/05. This will display all the entries in April and May. Now click the Gender arrow and choose F. In the next blank cell in column C, click the Autosum tool, and change the arguments to read:

```
=SUBTOTAL(3,C2:C17)
```

Again, the range is the whole list but the Subtotal function only concerns itself with the displayed entries. The first argument is 3 because that produces a COUNTA subtotal. COUNTA counts the number of cells that are not empty, so it doesn't matter if there are numbers or text entries.

So we have analysed the list and found that, in the two months of April and May, five women made contributions. If you have left the contributions column alone, the total in column D will now show how much the ladies contributed in those two months – £130.

**CONTACTS**

**Stephen Wells welcomes your comments on the Spreadsheets column. Email him at: spreadsheets@pcw.co.uk. Please do not send unsolicited file attachments.**



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**Ken McMahon**
is a freelance journalist and graphic designer. His involvement with digital graphics began with a Commodore 64. He graduated to Macs and now works mostly with PCs. Draw your own conclusions

# Bring the background to life

## Learn how to use Chroma keying in Adobe Premiere Elements 1

Chroma keying is something that's used a lot in TV to superimpose one video image on top another. The example that's always used to explain keying is the weather presenter, who stands in front of a blue screen pointing at a map which in fact exists only electronically. Increasingly, keying is not just used for maps, but entire virtual studios, and of course for movie special effects.

Blue and green screens are used for keying because, as additive primaries these colours are less likely to occur in the subject than, for example, yellow or red. But it's possible to pull a key using any colour.

Most consumer video-editing applications offer some form of colour keying that allows you to remove background detail from one clip and superimpose it on another.

This works in much the same way as the magic wand in an image editor – selecting pixels with similar colour values and rendering them transparent.

As you'd expect, with video it's a bit more complicated. For one thing the process has to be repeated 25 times a second. What worked well with one frame won't necessarily work with others in the sequence – particularly if the background changes.

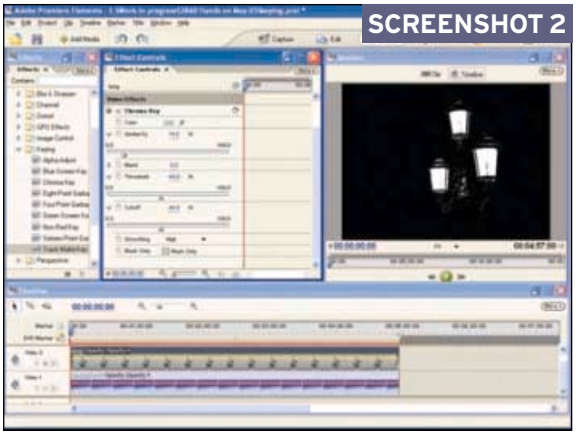
Taking some precautions at the shooting stage can minimise these kinds of problems and there are tools that can also help.

I'm going to take a look at the keying tools available in Adobe Premiere Elements 1 which, based as they are on those available in Premiere Pro, are about the most sophisticated keying tools you're likely to find in a sub-£100 video-editing package.

Premiere Elements 1 provides not one, but three keying tools. Each takes a slightly different approach and between them they can handle most keying eventualities.

### Chroma key

The first, and most general keying tool is called Chroma key and you can use it to render any colour transparent (see screenshot 1). Like the other keying effects you'll find it in the Effects window in the Keying subfolder of the Video Effects folder.




**Top: Chroma key is useful for removing a background of any colour, sky, for example**

**Bottom: Click the Mask Only checkbox to get a clearer picture of masked regions**

Chroma key is useful for removing a background that contains a range of colours, such as a blue sky, or a plain curtain. If you're used to the versatility of an image-editing magic wand, which can select a broad range of colours, you'll need to adjust your thinking for video. Because of the changing nature of the image, only colours within a relatively narrow spectrum can be effectively masked without intruding on the foreground subject.

To apply the Chroma key effect you just drag it from the Effects window onto the clip in the timeline. Selecting Premiere Elements' Advanced Effects workspace displays the Effect Controls window. Chroma key provides a number of fine tuning controls. First you need to drop the eyedropper onto the clip in the monitor to establish a base colour which the mask uses to create transparent areas.

Next, drag the similarity slider to widen the colour range and you'll see progressively more of the background disappear. At some point, the foreground will start to go too and this is when you need to stop and go back a little.

Three other sliders – Blend, Threshold and Cutoff are used to respectively adjust blending of the two clips and the amount and shade of shadow detail retained in the upper clip. A smoothing slider is used to control the degree of anti-alias applied to the boundary between opaque and transparent regions.

It can be quite difficult to judge what's being masked and what isn't when you have two clips superimposed on one another. A Mask Only check box shows the alpha channel mask so you can get a better idea (see screenshot 2).

### Blue screen

Masking a background of varying colour presents its own problems, but

### Shooting for Chroma key

**Your chances of producing a good key depend to a large extent on the quality of the footage. If you can afford it, a 3-CCD camcorder such as Sony's DCR-HC1000 will produce a cleaner colour signal that is easier to key than a single-chip camcorder.**

**Good lighting makes a big difference, as will a background painted with professional paint, such as Rosco Digicomp, formulated to provide the correct chroma and luminance values for blue and green screen keying. Alternatively you can get paper rolls and foldaway screens from video accessory manufacturers such as Lastolite.**

**How you light the background is as important as how you light the subject. Make sure the background lighting is bright and even, and sit the subject at least 2m in front of it. Use a wide aperture to throw the background out of focus to take care of any imperfections. Lastly, remember that, while taking steps like this will make life easier, it's still possible to produce usable shots for keying with coloured cloth, board or even a blue sky; you just have to work harder at it.**



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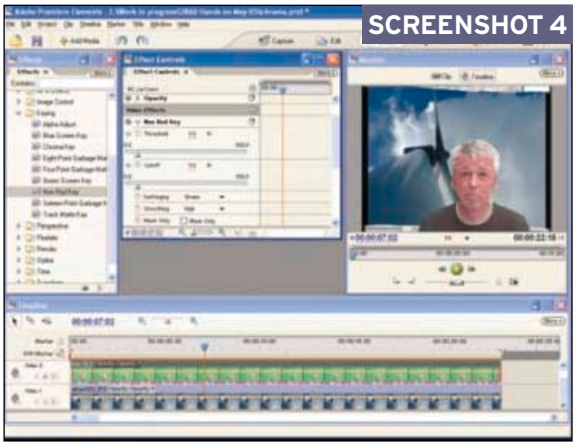
SCREENSHOT 3


SCREENSHOT 4

**Far left: Used with a properly shot clip, the green and blue screen keys are the most effective**

**Left: The Non-Red Key has a defringe control for removing halos**

if you've made the effort to shoot against a blue or green screen you'll get better results using the Blue and Green Screen keys (see screenshot 3).

This effect is straightforward in use. The threshold slider is dragged to the left until the blue or green screen becomes transparent. This isn't a gradual process as all the screen pixels are close in value (at least they should be). One second they are all there, the next, gone. Again, there's a smoothing slider which you can use to adjust anti-aliasing of the edge detail.

You'll find that as well as removing green screen detail, adjusting the threshold slider has rendered your subject translucent. You can regain its opacity by dragging the cutoff slider to the right – for best results stop just to the left of the threshold position.

A frequent problem that you encounter with keying is that the foreground subject is surrounded by a halo, often caused by coloured light spilling onto the subject from the background. Anti-aliasing helps to a degree, but it's often impossible to completely remove the halo without taking some of the subject with it.

One way around the problem is to use the Non-Red Key effect. Like the Red and Green Screen Key effects the Non-Red Key effect creates transparency from blue and green backgrounds. It also lets you blend two clips, which is useful if you want to retain some of the detail in the upper clip, but create a masked partially transparent effect.

The most useful thing about the Non-Red Key effect, though, is its defringing control (see screenshot 4). This removes residual blue or green colour from the edges of opaque areas in the clip – in effect a halo remover.

It does this by desaturating and balancing out the blue or green colour in the opaque part of the clip. A side-effect of this is that you may get a slight magenta or yellow cast, which is not ideal, but preferable to having a green or blue halo around your subject.

## Garbage mattes

Green screens can be expensive and difficult to set up, or you can paint a bit of board. Either way, it's not usually possible, or for that matter necessary, to cover the entire background and screens are usually limited to the immediate area behind the subject.

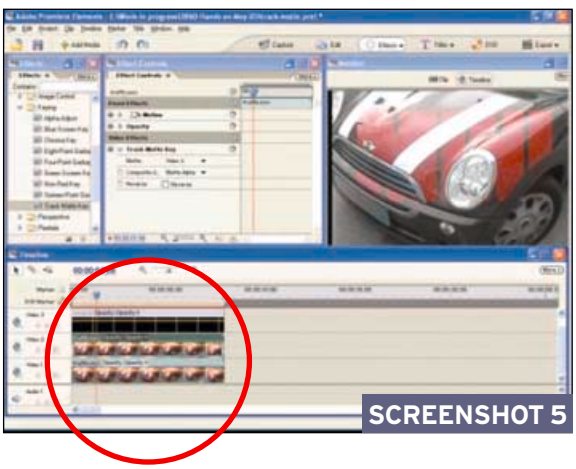
Unscreened parts of the shot are masked with what's called a garbage matte. Because you mask within the edges of the screen they don't need to be very neat or precise. Garbage mattes are polygonal masks and are defined by the number of points they contain.

A four-point matte is usually adequate, but occasionally you'll need more to get round an irregular object. Premiere elements provides 4, 8 and 16point garbage mattes. If your screen or lighting are less than perfect, garbage mattes can make it easier to pull a key by removing problem areas.

## Track mattes

There's another kind of matte that's included in the Keying folder. The Tracking Matte Key uses a greyscale image as a mask to composite two video tracks. The greyscale can be a still image file, created in Photoshop for example, or a title, created in the Title Designer.

**The same clip has been put into the Video 1 and 2 tracks and the Black and White filter applied to the lower track**


SCREENSHOT 5

As with the other keys, you work with two clips in tracks Video 1 and Video 2. The Tracking Matte goes into its own video track (Video 3) which you need to disable by right-clicking and selecting enable from the contextual menu (it's a toggle, so the check mark will disappear and the track goes from enabled to disabled).

The Track Matte Key Effect is dragged onto the clip in the Video 2 track and in the effects control panel you select the track you want to use as the matte – in this case Video 3. In the example (see screenshot 5) I've dragged two instances of the same clip into the Video 1 and Video 2 tracks and applied the Black & White filter to the lower (Video 2) clip. I then created a quick title using the Title Designer; for this kind of thing you need to use the fattest, boldest font you can lay your hands on – this is 370pt Poplar Std black.

I dragged the title above the Video 2 track to create a new, Video 3 track and disabled it, then dragged the Track Matte Key effect onto the clip in the Video 2 track and selected Video 3 as the matte track in the Effect controls window. This produces a matte effect with the lettering in full colour over a black and white shot – the rest of the colour clip in Video 2 is masked by the white areas of the track matte (the title clip) and only the black areas show. You can reverse the effect – and have black and white lettering on a coloured clip by checking the reverse box for the Track Matte Key in the Effect controls window.

**CONTACTS**

**Ken McMahon welcomes your comments on the Digital imaging & video column. Email him at: digitalimaging@pcw.co.uk. Please do not send unsolicited file attachments.**



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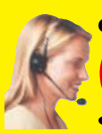

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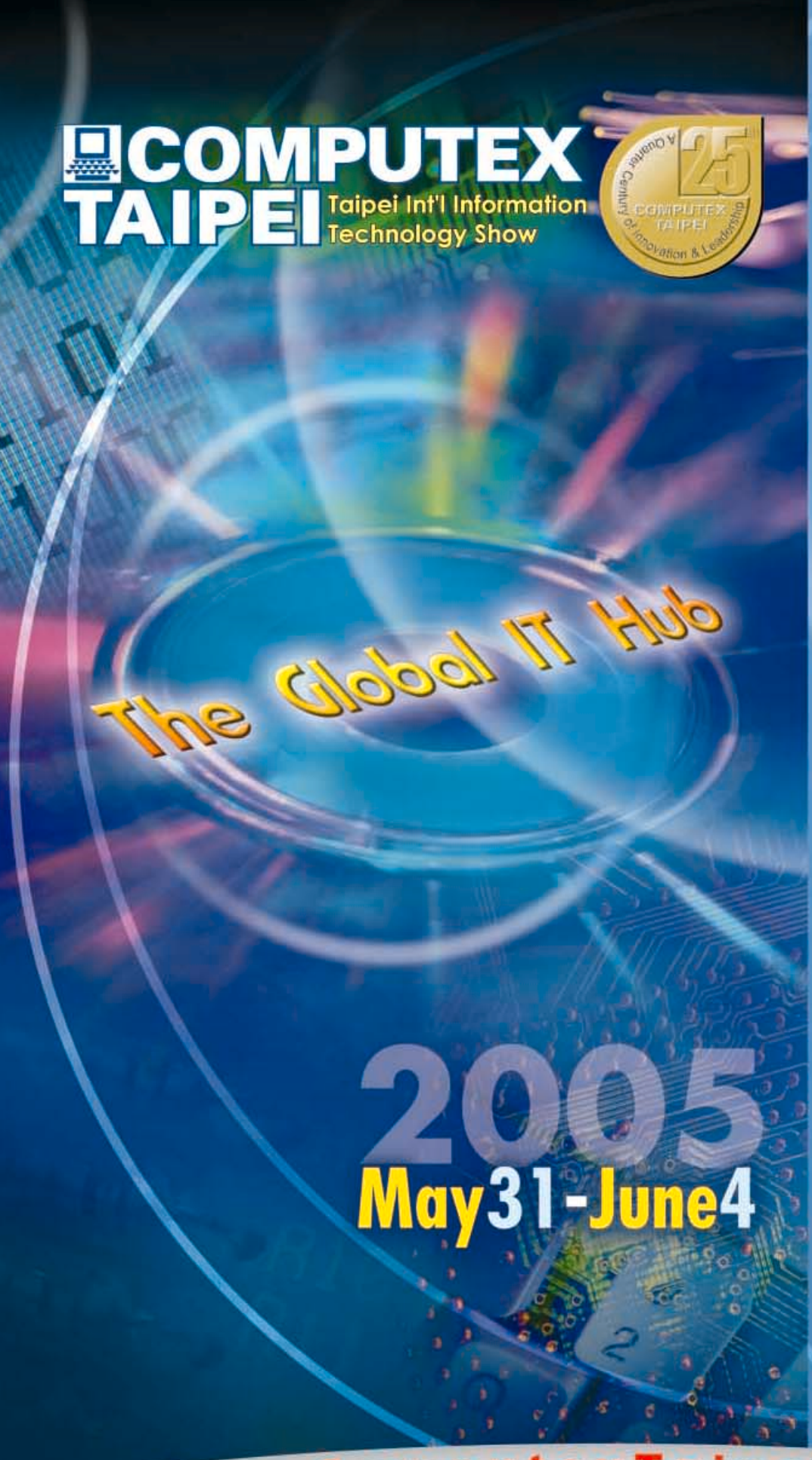


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**Nigel Whitfield**
edited computer magazines before going freelance in 1995. A specialist in Internet and consumer issues, he has a degree in Computing Science from Imperial College

# Add a bit of style to your site

## Learn the ins and outs of style sheets and gain far more control over how your site looks

In the March issue, we started to look at the basics of CSS – cascading style sheets – which can be used to give you much more control over how your website looks. We've seen how you link to a stylesheet in your web page code, and the basics of how you can set specific options, such as type styles and indents for the basic HTML elements, and paragraphs or headings. This month we'll look at some of the more flexible things you can do with CSS.

We've examined examples that simply specify additional attributes for basic HTML tags. But there's more you can do. If we recall one of the examples from last time, we created a paragraph that had a margin either side, using a stylesheet definition like this:

```
p { margin-left: 5em; ↙
margin-right: 5em; }
```

*(Key: ↙ code string continues)*

That's straightforward, but you might decide you want the whole page to have margins. So you may choose to define your body text instead of a paragraph. Then, if you need a different indent on a paragraph or heading, the margins are relative to the ones for the body; you can even specify negative numbers. This code:

```
p { margin-left: -5%; ↙
margin-right  5%; }
```

will make the paragraph slightly wider on each side than the margins specified by the body.

Of course, you're not likely to want to set the body margins of your page and then change them for all the text. But you might, for example, want to highlight a particular paragraph, by allowing it to become wider or to have a different colour. That's pretty easy in CSS, and it's done by adding a new class of paragraph (or heading, or whatever you want).

Screenshots 1 and 2 show a page that's been created this way, with body margins and a relative margin for a class of paragraph. As you can see from the screens, you can change the size of the browser window, but you'll always have the text with a margin on each side – so you can be relatively sure of that aspect of your layout, ensuring people don't have to scroll left and right to read lines.

To make the bottom paragraph extend outside the margins of the rest of the page, we created a class called outset with a line like this in the stylesheet:

**Above: You can specify margins for paragraphs and other elements that are relative to those of the parent element...**

```
p.outset {margin-left: -↙
5%; margin-right: -5%; }
```

and then we specified that we wanted to use that type of paragraph with this variation on the normal HTML tag:

```
<p class="outset">And ↙
this paragraph has been ↙
set ...</p>
```

You can also add other effects, such as a background colour, or even a box around part of your page. For instance, if you're doing a web tutorial, you might want to clearly indicate parts of your page that are commands users will have to type into their computer. The simple way to do that might be to use the PRE tag, to force text into a fixed width font, but this stylesheet is probably more eye-catching:

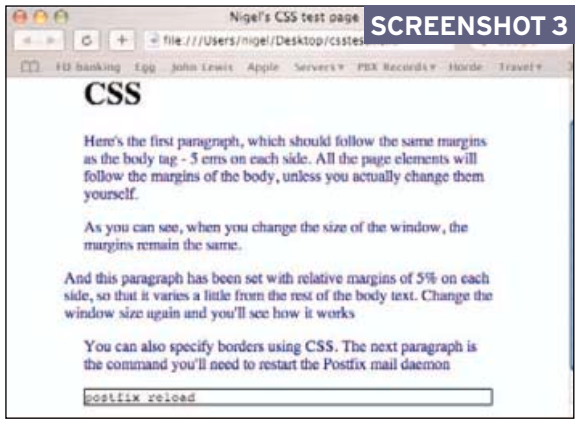
```
p.command { font-family: ↙
monospace; border: solid;↙
 border-width: thin; ↙
width:↙ 100%; }
```

You can see the results in screenshot 3, where we've illustrated another point: our stylesheet includes a simple definition for the P tag, which simply sets the colour to blue. That means all the styles based on the paragraph are in blue, and to make the command example at the bottom of the screen come out in black, we must add colour: black to the p.command definition above. In other words, styles that are classes of a basic tag, such as a paragraph, inherit from the basic one. So if we wanted all the paragraphs, except ones that specifically use a different font,to be in a sans serif face, we just need to add that to the basic paragraph. It's like a word processor, where a new style will be based on the Normal style with font changes, but it's important to remember – especially if you're creating stylesheets by hand.

**...so when visitors change the size of the browser window, your page will still have the same effect**

### Custom styles

If you look at the stylesheets that are created by programs such as Dreamweaver, you'll also see something else – styles that don't




**It's easy to add borders to a paragraph, and styles will inherit properties from their parent, which you can override later**



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appear to be based on a preceding one, with names that don't include that of a basic tag, such as the P or H1 tags.

These are easily created; instead of defining a style, as we've seen above, using a tag then a full stop and a class, you simply put a full stop, followed by a style name, like this:

```
.mystyle { color:green; ↙
border-left: double; ↙
font-family: serif; ↙
margin-top: 5em; }
```

This will give green serif text, with a 5em margin above the paragraph and a double vertical line at the left side. You can refer to paragraphs or other elements and apply that class to them, too, or you can simply use the DIV tag; you'll see this extensively in the code produced by web design packages, and it looks a little like this:

```
<div class="mystyle">↙
This text doesn't need a ↙
paragraph tag; it gets ↙
its style from mystyle ↙
via CSS</div>
```

In screenshot 4, you can see the results of this, once using DIV along, and once using an H2 tag with the appropriate class.

## Perfect position

If that was all CSS could do, it would be useful enough, but there are plenty of other tricks, including detailed positioning of elements on the page. You can, for example, make sure that an image such as a logo or home page link is always in a particular place on the page. In screenshot 5, you'll see that the logo is at the bottom right of the page – and it will stay there whatever size you drag the window to. There is a downside, though – make the window too small, and the logo will sit on top of the text, rendering it pretty much impossible to read, so I wouldn't recommend that you use a technique like that with a big logo.

The trick we used to put the logo there was to add this to the stylesheet:

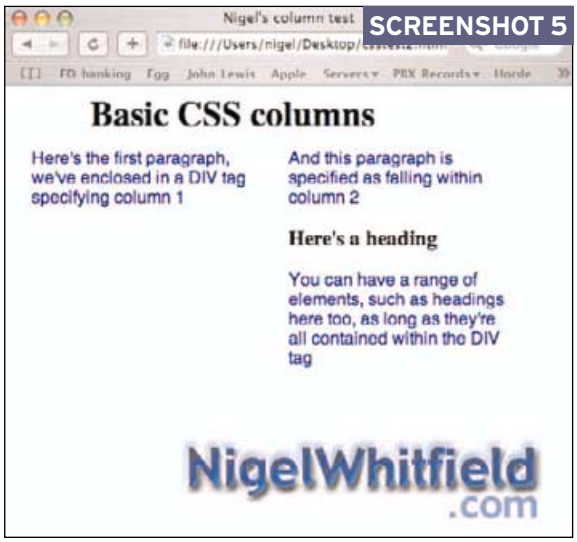
```
.logo { position: ↙
absolute; bottom: 5%; ↙
right: 5% }
```

and then the image tag was simply enclosed with

```
<div class="logo"> </div>
```

You can also specify relative positions or give values in pixels, but that runs the risk of not working well unless you tell people what size they should set their screen to.

What you're probably wondering about, however, is how we got the two-column layout on the page above the logo. Sure, you can do that with tables, but they can be fiddly to work with. CSS3 will have better support for columns than CSS2.1, but it's still possible, with some caveats, to come




**Top: Create named styles then apply them to more than one element on the page with the DIV tag**

**Bottom: With CSS positioning you can ensure, for example, that your logo appears at the bottom right of the screen**

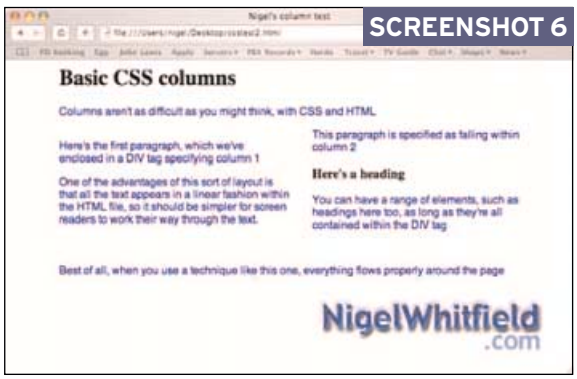
up with a good looking layout.

The first thing we tried – and there are lots of solutions – was to create two custom styles that look like this:

```
.column1 { position: ↙
absolute; top: 10%; left:↙
 5%; width: 40%}
.column2 { position: ↙
absolute; top: 10%; left:↙
 50%; width: 40% }
```

and then enclose the first column of text in a DIV of class column1 and the second in a class for column 2.

What's the drawback? Well, the page looks fine in screenshot 5, but resize it




**Positioning allows you to create detailed layouts, including columns, without having to resort to tables, but be careful – you can end up causing some inadvertent problems**

and you'll see the problem – make the window too small, and the column text collides with the heading above it. Try to add another paragraph that's not in a column, and it'll appear below the main heading, spanning both columns. If you make the position of the columns relative, you'll find that column 2 starts with blank space, before the text appears below and to the right of column 1. So we're clearly doing something a little wrong here.

Screenshot 6 shows the results of an alternative way of doing things, using an option called float in the stylesheet. We have two column definitions that look like this:

```
.column1 { float:left; ↙
width: 50%; margin-right:↙
 5%}
.column2 { }
```

The first column is enclosed in a DIV with the column 1 class, and the second with column 2. To add the text that runs the whole way across the bottom below the columns, we've had to create a style with absolute positioning, or extra material would be tacked onto the end of column 2 – switching in and out of columns on a page isn't recommended, as it can be confusing working out the order in which things should be read.

That said, it is likely that creating layouts such as this using CSS is easier for people with screen readers to understand, than with traditional tables; when you use HTML tables, you have to work across the page, row by row, rather than column by column, and if it's text you're formatting, then you may end up with something that's not in the right order. Using CSS you can have the text in your web page in the correct order for reading, making it much more accessible.

So far, we've only scraped the surface of what's possible with CSS. You'll find plenty of tutorials on the web covering further aspects of it, including how you can format tables more effectively using CSS. We'll come back to the topic in a future column, and look at some of the more advanced features. In the meantime, it's worth exploring – you'll find plenty more attributes you can experiment with besides the ones shown here. Good places to start include the W3C at **www.w3c.org** and the tutorials at W3schools, **www.w3schools.com/css**.

**CONTACTS**

**Hands on Web development will return in July's issue. Nigel Whitfield welcomes your comments on the Web development column. Email him at: webdev@pcw.co.uk. Please do not send unsolicited file attachments.**



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**Alan Stevens**
has been implementing and supporting networks for over 25 years, working for IT vendors, systems integrators and customers. He now mostly researches and writes about networking matters

# Cut your call costs online

## An easy way to enhance and manage Voice over IP using SIP

I am frequently asked by readers about things they can do, beyond the basic sharing of files and printers, with a home or small-business network. Hosting a local mail server is one option, and something I've talked about in some depth before. Another, and the subject of this month's column, is the use of Voice over IP (VoIP) to make and receive telephone calls over Lan and Internet connections. More specifically, I want to look at how you can take advantage of SIP – short for the Session Initiation Protocol – the rapid adoption of which is making VoIP a more affordable, mass-market technology.

### What is SIP?

Strictly speaking, you don't have to understand what SIP is or does in order to use it; however, a basic appreciation of its role in VoIP communications is worth having, if only to help avoid problems when trying to get it to work.

Most people understand that VoIP itself involves taking voice signals and digitising them for transmission over a network, wrapped inside TCP/IP data packets. These can later be unwrapped, decoded and converted back to sound at the receiving end to talk to someone over the Lan – or even the Internet.

What VoIP doesn't give you, however, is any mechanism for locating the person you want to call, making sure they're available, or working out what their software/hardware is capable of handling. Neither does it help when it comes to setting up the call or terminating it when you're finished. That's where SIP comes in, by providing the 'signalling' required to manage calls.

SIP isn't the only signalling protocol that can be used for this purpose – H.323 and MGCP (media gateway control protocol) do much the same. However, SIP is proving popular with both software and hardware vendors and, equally importantly, with online providers offering low-cost Internet telephony services. You can also initiate and manage instant messaging, video/audio conferencing and network gaming sessions with SIP, and it's supported by Microsoft as part of Windows XP and its instant messaging client, Windows Messenger (see screenshot 1).

### What you need

Because SIP support is provided in Windows XP, you can get started with VoIP simply by using Windows Messenger on a PC equipped with either a microphone and speakers or a plug-in headset. You can also use a USB telephone headset, both with Windows Messenger and alternative custom softphone applications, such as the free X-Lite application available from Xten Networks (**www.xten.com**).

However, such software-based approaches require a host PC in order to make and receive calls. That's fine if you're in front of your PC all the time, but awkward if you're not. For those of us who prefer a more telephone-like experience, there are several options.

One of these is to buy a custom VoIP phone, which, instead of plugging into your telephone line, has an Ethernet port for Lan attachment. These can be bought for around £60 to several hundred pounds, depending on specification. As well as handling the voice encoding/decoding part of the process, they now nearly always have SIP support built in.

Alternatively, you can get a VoIP adapter, which, again, will have an Ethernet port to connect to the Lan, plus one or more sockets to allow standard analogue telephones (including Dect wireless phones) to be used to make and receive VoIP calls. A single-port adapter will cost you around £50-£70. And lastly, you can get broadband routers with VoIP interfaces built in, for use with both ADSL and cable services. As with VoIP adapters, it's possible to plug one or more ordinary home phones into one of these routers (depending on the specification), with prices starting at around £80 ex VAT for a router with just one analogue phone port.

**A custom IP phone like this from Avaya is one way of adding voice to your data network, but there are lots of other options**

### The SIP service

As well as the client software and hardware, you'll also need to sign up with a SIP service provider in order to be able to make and receive calls. There are lots to choose from and what you pay can vary widely. At one end of the spectrum, you'll find providers such as Free World Dialup (FWD) (**www.freeworlddialup.com**), which charges nothing to register or use its SIP services.

In order to be able to call ordinary PSTN (public switched telephone network) subscribers and receive incoming calls from the PSTN, you'll need a provider that runs a SIP-to-PSTN gateway. SIP-to-SIP calls are still free, but charges are levied for outgoing calls via the PSTN gateway, typically by buying call credit in advance, like pay-as-you-go mobiles.

You'll be assigned an ordinary phone number to enable PSTN subscribers to contact you. In most cases this will be a non-geographical 0870 or 0845 number, the service provider making extra money from calls made to your incoming number. This cost will be paid by the caller, making these calls more expensive than standard dial-up, although you can often opt for a geographic number instead (that is, with a code starting 01 or 02), in which case callers will be charged at the standard national or local rate depending on where they're calling from. However, because it reduces their revenue, most service providers charge for geographic numbers (which don't have to match your actual location), although some, such as Sipgate (**www.sipgate.co.uk**), enable these numbers to be registered for free.

Some providers also offer voicemail and other services, but whatever the options or provider, the end result of registering for a SIP account is much the same as when signing up for email. You'll be assigned a unique username, protected by a password of your own choice and given a SIP address, referred to as a URI (uniform

**SCREENSHOT 1**

**SIP is proving popular as a signalling protocol for VoIP and other messaging application, and is supported by Microsoft Windows Messenger**



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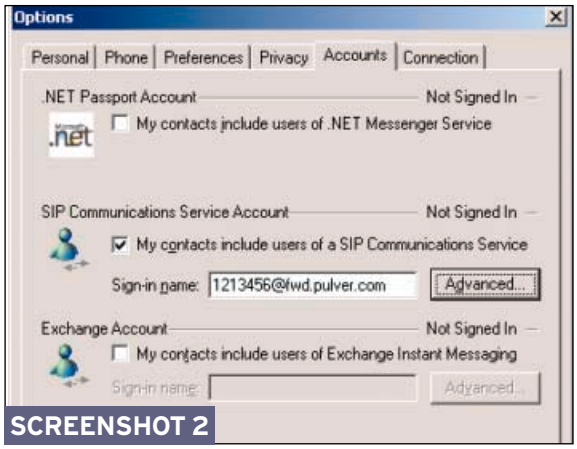


SCREENSHOT 2

SCREENSHOT 3

**You're prompted for the FWD account name and password as soon as you sign on from Windows Messenger**

resource index), typically in the format yourname@SIPprovider.com.

Often, you'll be assigned a number rather than a name before the '@' symbol to simplify dialling. With Free World Dialup, for example, the URI will be in the format 999999@fwd.pulver.com, where 999999 is a unique six-digit number that other FWD users can punch into their phones to call you.

## Going equipped

Armed with a SIP URI and account details, you then have to configure your softphone or VoIP hardware to register with your Internet provider. This tells the provider you're online and ready to make/receive calls and, importantly, your current IP address.

Exactly how you do this depends on the hardware/software you're using, but the basic requirements are much the same and it isn't very difficult, as you can see from the following example, which outlines what's required for Windows Messenger.

You can't use MSN Messenger with SIP, only the Windows variant included as part of Windows XP. Not all versions of this application support SIP, particularly Windows Messenger 4.7.3, which you'll have if you've installed XP Service Pack 2. The latest 5.1 release, however, provides the necessary SIP communication service support, and can be downloaded free from the Microsoft website.

## Windows Messenger

To configure Windows Messenger 5.1 for SIP, navigate to the Tools, Options menu and select the Accounts tab. Tick the box marked My contacts, include users of a SIP Communications Service, and enter your sign-in name. See the example in screenshot 2 – I've used a mythical FWD account (123456@fwd.pulver .com).

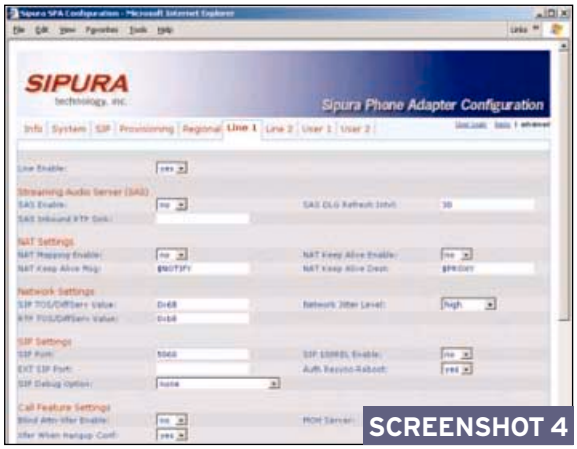
That done, click Advanced and opt to manually configure the host SIP server which, for FWD, needs to be set to fwd.pulver.com with UDP specified as the protocol to be used. You then need to sign in to get Windows Messenger to register with the FWD SIP server. The first time you do this, you'll be prompted for your username (the number part of the FWD address, in this instance) and password, which you can ask the software to remember (see screenshot 3).

**Here Windows Messenger 5.1 has been configured to use a SIP Communications service account provided by Free World Dialup**

You will then be registered with the service and can start making calls by clicking on Start a Voice Conversation. If you haven't configured suitable contacts, just select the tab marked Other and, where it asks for an email address, type in the SIP URI you want to call. In the case of another FWD user, the number part of their address is all that's needed and, to check you're connected correctly, you can type 612 to call the FWD speaking clock or 958 to have the server tell you what your number is.To call users registered with other providers, you need to specify the full URI (user@SIPprovider.com).

## Hardware setup

It's much the same procedure when configuring a SIP adapter or a VoIP-enabled router, as can be seen from screenshot 4. This shows the web interface for a Sipura SPA-2000 SIP adapter – a small box with an Ethernet port at one end to attach to the Lan and two RJ-11 connectors at the other, to which a pair of analogue telephone handsets can be attached.



SCREENSHOT 4

**It may look a little daunting but there's not much that needs to be changed to get a Sipura SPA-2000 SIP adapter to work with a service such as Free World Dialup**

Provu Communications (www.provu.com) provides UK implementations of the Sipura adapter. These come with a UK power adapter and, by default, are set to use DHCP to obtain an IP address, so just plug it into your home or business Lan and the basic networking parameters should be set automatically. Or you can assign an IP address, net mask and gateway using a voice menu system, accessed by pressing **** on an attached phone. This same menu system will also tell you what IP address has been assigned when using DHCP, and you'll need to connect to that address using a web browser to complete the setup.

Unfortunately the web interface on the Sipura adapter isn't the simplest around, but thankfully there isn't much that needs to be changed. In this example I've configured line 1 to use Free World Dialup using the same details as for Windows Messenger. The only difference is the use of a special proxy server hosted by FWD (fwdnat.pulver.com:5082) to get over the problem of plugging the Sipura adapter into a Nat-protected (Network Address Translation) network.

Again, it's easy enough to test the configuration once completed. First check you get a dial tone when lifting the receiver (only present once the phone has registered to the SIP server), then dial a test number at FWD, such as the speaking clock on 612.

It really can be that simple, although problems can arise. A particularly problematic area is variable IP addresses and Nat, as employed on most home and small-business networks. So next month I'll be discussing how to address such issues and looking at some other things you can do with VoIP- and SIP-enabled products.

**CONTACTS**

**Alan Stevens welcomes your comments on the Networks column. Email him at: networks@pcw.co.uk. Please do not send unsolicited file attachments.**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**Mark Whitehorn**
is one of those lost souls who actually likes databases. He splits his time between consultancy, writing, working for two universities and tinkering with old cars

# Making sense of mix 'n' match data

## How to extract the reports you want when entries of different types are used

If you have to deal with databases where some entries use checkboxes and others plain text, producing a report could be difficult. Jules Gauthier has just this problem with a table storing student information, and asked how he could generate reports showing totals.

His table uses a mixture of Yes/No and text fields to record student data, such as tutor, course and age (see screenshot 1). To produce reports the trick is to find the query that massages the data into the shape you need for the report. After that, writing the report should be easy.

Jules is using Access but I'll show SQL solutions as well, which should be helpful if you use other database engines.

Most of the fields are Yes/No data types and display checkboxes, but one, Chemistry, stores the information in a text field. In this entries of 'Yes', 'No', 'D/K' (for Don't Know) and no entry are acceptable.

When you paste an Access table containing checkboxes into Word, the checkboxes vanish and Yes or No entries appear in the fields (see table 1).

This table records essentially the same information in two fields: the Under 19 and Over 19 checkboxes. It's possible with this table design to end up with a student marked as both over and under 19. This isn't a problem of Jules' making, he's just coping with a table he's been given. As a rule, I'd use one field here; if someone isn't 'Under 19', it is safe to assume they are over.

To count the number of students who have scored 'Yes' for Botany, create a new query based on the Students table and place the ID and Botany fields into the query grid. Run the query and you'll have a list of all student IDs with checkboxes alongside, which is the data needed to perform a count. Return to the query design and add a Totals row (click the Totals button from the top menu bar). For the ID field, set the Total to Count: this counts up all the individual IDs (and equates to all students, as we know each student has a unique ID). In the Botany field, set Total to Group By. This tells the query to subdivide the count of students on the basis of the entries in the Botany field. Run it and you'll see that the count is seven Yes and nine No (see screenshot 2). This is the BotanyStudentCount query in the DBCMAY05.MDB file, which is available on the DVD.

The SQL for this query is:

```
SELECT Count(Students.Id)↙
 AS CountOfId, ↙
Students.Botany
FROM Students
GROUP BY Students.Botany;
```

*(Key: ↙ code string continues)*

If you also want to see the Personal Tutors for each student you can add this field to the query with a Group By total (see table 2). It will group the student not only by their Botany score but also by tutor, like this:

```
SELECT Students.[Personal↙
 Tutor], ↙
Count(Students.Id) AS ↙
CountOfStudents, ↙
Students.Botany
FROM Students
GROUP BY ↙
Students.[Personal ↙
Tutor], Students.Botany;
```

Each Group By in a query further divides the data, so there are now four categories of score instead of two: given two tutors and two types of Botany score, it's possible to generate four permutations. You could, of course, replace tutor names with the Course Program field and see a different set of four permutations.

To count entries in a text field, build a similar query to BotanyStudent Count but using the Chemistry text field. The result looks like this:

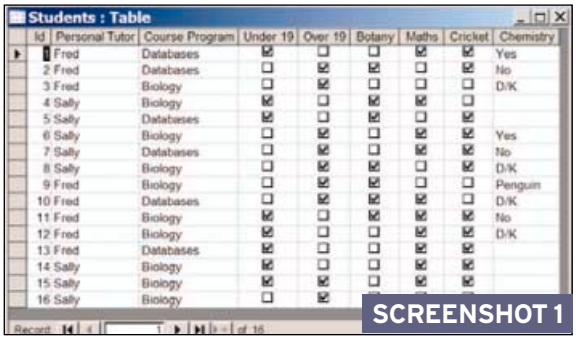
**ChemistryStudentCount**

| CountOfStudents | Chemistry |
|---|---|
| 6 | |
| 4 | D/K |
| 3 | No |
| 1 | Penguin |
| 2 | Yes |

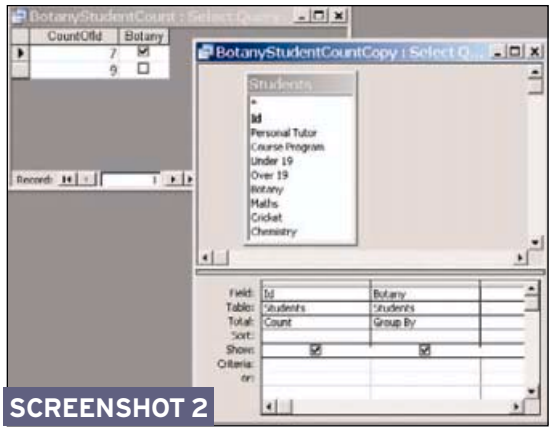
There is a total for each unique entry in the Chemistry field. The

**Table 1 – Students**

| Id | Personal tutor | Course program | Under 19 | Over 19 | Botany | Maths | Cricket | Chemistry |
|---|---|---|---|---|---|---|---|---|
| 1 | Fred | Databases | Yes | No | No | Yes | Yes | Yes |
| 2 | Fred | Databases | No | Yes | Yes | No | Yes | No |
| 3 | Fred | Biology | No | Yes | No | No | No | D/K |
| 4 | Sally | Biology | Yes | No | Yes | Yes | No | |
| 5 | Sally | Databases | Yes | No | Yes | No | Yes | |




SCREENSHOT 1



SCREENSHOT 2

**Above: The initial student table has a mixture of checkboxes and text**

**Left: This shot has been tweaked to show the query that counts up the Yes and No entries in a check box and the answer table**

**Table 2 – BotanyStudentAndTutorCount**

| Personal Tutor | CountOfStudents | Botany |
|---|---|---|
| Fred | 4 | Yes |
| Fred | 4 | No |
| Sally | 3 | Yes |
| Sally | 5 | No |

**Table 3 – ChemistryStudentAndTutorCount**

| Personal Tutor | CountOfStudents | Chemistry |
|---|---|---|
| Fred | 1 | |
| Fred | 3 | D/K |
| Fred | 2 | No |
| Fred | 1 | Penguin |
| Fred | 1 | Yes |
| Sally | 5 | |
| Sally | 1 | D/K |
| Sally | 1 | No |
| Sally | 1 | Yes |



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strength of this answer table is that it's easy to identify entries saying 'es' or 'N' as fumble-fingered typing of Yes and No; in this example, someone has gratuitously entered Penguin in one student's record. You can also add personal tutor data here and see the result (see table 3).

If we ask to see the results for Botany and Chemistry in the same answer table we get a result, but we will get all the existing permutations between two types of Botany entry and five types of Chemistry entry (see table 4).

There may be occasions when this is useful, but querying for each subject individually often gives a clearer picture of the data.

So far we have mainly looked at the data in terms of how many students have a particular entry for a given field ('How many students are "Yes" for Botany?').

However, we can also look at the data in terms of, for example, the number of 'Yes' entries that a given student has across several checkboxes fields (our sample table holds Botany, Maths and Cricket data in this way). Build a new query containing the ID field and then create a new field to contain the total for all three subjects (see screenshot 3).

```
SELECT Students.Id, ↙
([Botany]+[Maths]+↙
[Cricket]) AS
NumberOfYesForBotany↙
MathsCricket
FROM Students;
```

Run the query and the students have negative scores such as -2 and -1.

In the computing world, for dense mathematical reasons, Yes (or truth) is represented by -1 and No (or falsity) is represented by 0. When you use checkboxes this fact is hidden, but at times it's a useful piece of information. If a student has three 'Yes' values, we are adding (-1)+(-1)+(-1) which equals -3. This is perfectly accurate, but pretty unreadable. So, we simply multiply the end result by -1 which will change any negative number into a positive one.

Edit the field so it reads:

```
NumberOfYesForBotany↙
MathsCricket:
([Botany]+[Maths]+↙
[Cricket])*-1
```

Now the results are displayed as readily-understandable positive values (see table 5).

Chemistry is a text field, but we can add the Yes scores from it into our total by adding another new field:

```
NumberOfYesForAll↙
Subjects:
([Botany]+[Maths]+↙
[Cricket])*-
1+IIf([Chemistry]=↙
"Yes",1,0)
```

**Table 4 – ChemistryAndBotanyStudentCount**

| CountOfId | Botany | Chemistry |
|---|---|---|
| 2 | Yes | |
| 2 | Yes | D/K |
| 2 | Yes | No |
| 1 | Yes | Penguin |
| 4 | No | |
| 2 | No | D/K |
| 1 | No | No |
| 2 | No | Yes |

**Table 5 – TotalBotanyMaths Cricket**

| Id | NumberOfYesForBotanyMathsCricket |
|---|---|
| 1 | 2 |
| 2 | 2 |
| 3 | 0 |
| 4 | 2 |
| 5 | 2 |

**Table 6 – AllSubjectsCount**

| Id | NumberOfYesFor BotanyMathsCricket | NumberOfYesFor AllSubjects |
|---|---|---|
| 1 | 2 | 3 |
| 2 | 2 | 2 |
| 3 | 0 | 0 |
| 4 | 2 | 2 |
| 5 | 2 | 2 |

The first part of the calculation is as before, adding three scores and making the results positive. The second:

```
IIf([Chemistry]="Yes"↙
,1,0)
```

looks at the entry in the Chemistry field and, if it is Yes, returns a 1, but if it is anything other than Yes (No, D/K, Penguin and so on), it returns a zero. The plus symbol between the two parts of our calculation will add the value generated by the first part to that generated by the second. If student ID 1 has scored two for Botany, Maths and Cricket and a Yes for Chemistry, the total score will be three (see table 6).

**The second field in the query grid calculates the total number of Yes entries in three checkbox fields**

## Replacing a database

Even databases reach the end of their natural lives, and there may be a great deal of grief involved in replacing them. The big difference when buying your second database is that you now have a great deal of data to transfer from the old one.

This month we'll start to look at an example of this. Next month we'll drill into some of the pitfalls that can arise in trying to transfer data between database applications.

A friend of mine runs a nursery and for years has used a hand-written Access program to store information about the plants it sells. Recently he purchased a professional program, also based on Access. You might think his task is easier as he is using the same database engine, but that often makes little difference.

Moving data between applications is common in data warehousing, and tools have evolved (called ETL tools: extract, transform and load) to make the process easier. They are often worth using, but tend to be expensive. We'll look at getting the same result for free, using queries, import/export facilities and common sense.

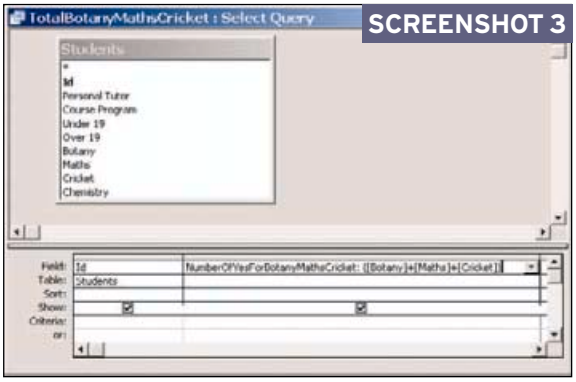
You can split the process of moving data between database applications into six broad steps: 1) Getting the data out of application one; 2) Getting it into application two; 3) Changing the format of the old data; 4) Changing the 'shape' of the old data; 5) Supplying any new default values to the old data; 6) Appending the old data to the new.

There are about 1,200 entries for plant species in the existing system. Looking at the 'plant' table in both applications, it was apparent that some of the fields were the same (Genus, Species, Sub-species and so on). However, the new table had many more fields (for example, Annual, or Likes Dry conditions). 'No problem,' I said, 'I'll try cutting and pasting some data from the common fields to a copy of the new database.'

It was just as well we tried it on a copy because it really upset the new application. As we scrolled through the existing sample records in the new database, all was well. As soon as we tried to look at one of our cut-and-pasted records, the application jumped back to the first of the sample records and refused to look at our new ones.

Next month we'll walk through the solution and provide an explanation for the odd behaviour of the application. However, I'll give you a clue. It has to do with those extra fields that exist in the new table...

**SCREENSHOT 3**




**CONTACTS**

**Mark Whitehorn welcomes your comments on the Databases column. Email him at: database@pcw.co.uk. Please do not send unsolicited file attachments.**



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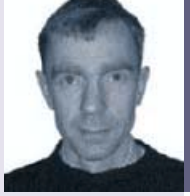
**Tim Anderson**
is both an IT journalist and software developer, and began writing for *PCW* in 1993. Since his first Commodore Pet, he has acquired expertise in Rad programming, Windows and the Internet





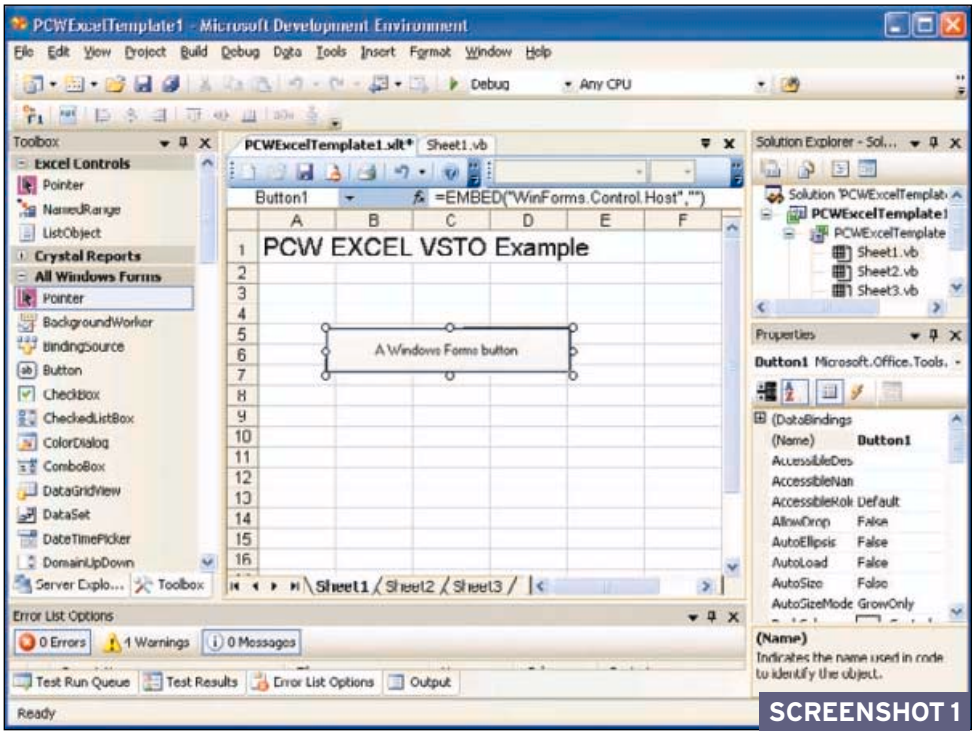
# The benefits of developing in Office

## Programming in Microsoft's suite can make life easier – here are a few suggestions

Microsoft likes to regard its Office suite as a development platform as well as a productivity tool, although developing in Office has some serious disadvantages. All users need to have Office installed, preferably the same version, and your solution has a dependency on one of the largest and most complex of Windows applications. On the other hand, extending Office with custom code can bring huge productivity benefits. If you ever find yourself manually copying and pasting data from some other application to Word or Excel, then it's likely that an Office solution could help you. Other Office suites also have macro editors, but Microsoft Office is particularly rich in this area, as well as being the most widely used application.

Although it offers a rich range of developer features, Office development presents a bewildering array of options once you decide you need to do some programming. Once upon a time, all the Office applications had independent lives, and some legacy stuff lingers on, such as the Excel 4 macro language, which still runs in Excel 2003. For the past 10 years or so, mainstream Office development has used Visual Basic for Applications, which has a lot in common with the standalone version of Visual Basic. Microsoft has steadily increased the number of ways you can use VB with Office, which now includes COM add-ins, Smart Tags and Smart Documents, as well as ordinary macros. Here's a summary of what these things are:

- A COM add-in is an external library that can be created by any language and compiler capable of building COM DLLs. This includes Visual Basic, Delphi, C# and C++.
- Smart Tags were introduced in Office XP. This looks for key words or patterns in your data or typing. When a key word is recognised, it is 'tagged' with a pop-up menu that can run code of your choice. For example, a postcode could prompt a menu that would display the address and driving directions. Simple Smart Tags can be defined in XML files, or written as COM DLLs.
- Smart Documents arrived in Office 2003. They work in conjunction with XML schema, imposing structure on Word or Excel documents. As the user moves through the elements of the document, code is triggered that can display help in the task pane, including data-driven prompts and pick-lists. Like Smart Tags, Smart Documents can be either XML files or COM DLLs.




**This VSTO 2 application shows Excel open in the Visual Studio forms designer (see box below for more information)**

## Moving to .Net

For some time now, Microsoft has been assuring us that .Net is the way forward for Windows development. Canny observers ask why Office itself is not developed using .Net, if the technology is really so good. It is easy to think of reasons. First, .Net applications tend to be slower and more memory-hungry, which would not please Office users. Second, it would be expensive to port all the code in Office, and dangerous in terms of backward compatibility. Third, COM still has capabilities that .Net lacks, such as the ability to host documents from one application within another. Much of the power of Office development comes from the way it exposes its features as COM objects, which are relatively easy to control programmatically. Porting it all to .Net would be a huge task.

Since Office can't easily be converted to .Net, Microsoft has a tricky job explaining to developers why they should write code in .Net while still building Office solutions. Its answer depends on a COM interop, which enables .Net code to interoperate with COM. A .Net library, known as an assembly, can be registered as a COM object, and .Net apps can easily access COM libraries. This enables you to build COM add-ins and libraries using .Net, including Smart Tag and Smart Document apps.

## VSTO2 integrated solution

**Visual Studio Tools for Office 2 (VSTO 2) integrates with Visual Studio 2005. When you start a new Word or Excel project in Visual Studio, a Word or Excel document appears where you would normally expect a form designer, with menu negotiation so you have full access to Office features (see screenshot 1). You can place Windows Forms controls on the document, such as a button which you can double-click to write code. The code-behind class inherits from a class representing the Office document or worksheet. So if you wanted a button-click to write data to an Excel cell, you could write this in VB:**

```
Me.Cells(2, 2).Value = "Hello from ↙
VSTO"
```

*(Key: ↙ code string continues)*

**This level of integration with Visual Studio is amazing, but only time will tell whether Microsoft achieves the robustness necessary for usable solutions.**



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## Sound control

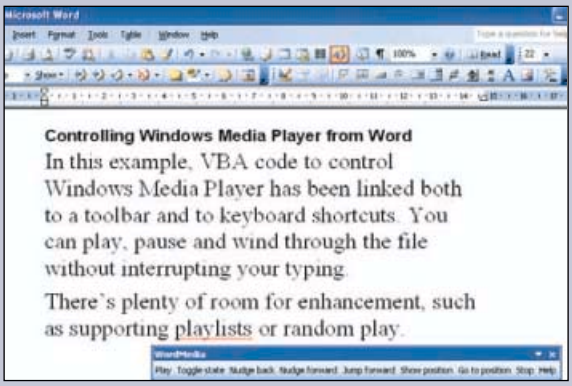
**You can control Windows Media Player or Itunes from Word. It is handy to stop the music with a keyboard shortcut, or pause an interview or meeting when transcribing a recording. You can do this with a few lines of code. Open up the VBA editor in Office, and add a reference to the Windows Media Player ocx (msdxm.ocx). Now you can write code like this:**

```
Public wmp As  MediaPlayer.MediaPlayer
Set wmp = CreateObject("MediaPlayer.MediaPlayer")
wmp.Open PathToMusicFile
```

**In this example, PathToMusicFile is the audio file you want to play. Keep a reference to the instance of Windows Media Player, so you can control it, stop it and perform other functions. For Itunes, set a reference to the Itunes type library and you can write:**

```
Public it As iTunesLib.iTunesApp
Set it = CreateObject("iTunes.Application")
it.PlayFile PathToMusicFile
```

**There is only ever one instance of Itunes, which means you can use the application or the macro to control it, whereas the Windows Media Player example starts a separate hidden instance. This is using Windows Player Player 10 and Itunes 4.7; other versions may be different.**




**This VBA template enables Windows Media Player to be controlled through keyboard shortcuts**

There is yet another type of Office solution, called VSTO (Visual Studio Tools for Office). Using VSTO, you can attach .Net assemblies to Office documents and templates. Code in the attached assembly is triggered by Office events, such as opening and closing documents. VSTO applications are developed using Visual Studio .Net 2003, and a major upgrade is planned for the forthcoming 2005 edition of Visual Studio. A great advantage of VSTO is that the attached assembly is a separate file that can be deployed on a server. Users then automatically get the latest version, which is copied to their machine in the background.

I quizzed KD Hallam, Microsoft's general manager of Visual Tools for Office, about the future of VBA versus .Net development. According to Hallam: 'They are two different products, and they serve two different needs. Both will continue to ship, and they both will be supported. And they also will run side by side in the same document.' Hallam sees VBA as suitable for end users or small-scale development, while VSTO is aimed at enterprise developers. 'VBA is a very proprietary language and it has all of the strengths and weaknesses of COM. VSTO is a .Net-based equivalent. It supports VB.Net, it supports C#, it has all the security features associated with .Net, it has access to all the Windows Forms controls in .Net. In VBA you have the ease of use, but you don't necessarily have the scale and the enterprise robustness.'

### Devilish details

Whether you use VBA or .Net, writing code for an Office add-in is not very different from writing code for other types of application. You can use forms, modules and classes, and there are few restrictions on what you can do. The tricky part is how your code interacts with Office. If you stick with the built-in VBA editor, you can get the best integration. For example, you can add a macro to a toolbar using Tools, Customize, or set up a keyboard shortcut from the same dialogue.

If you build a COM add-in, integration is somewhat harder. You cannot see the add-in functions in the Tools, Macros dialogue, but with some effort you can set up menus and toolbars in your add-in code. You can also call functions in the add-in from VBA, although it is ugly. Use code as follows:

```
Dim TheAddIn As Object
Set TheAddIn = ↙
Application.COMAddIns.↙
Item("AddinProj.Addin↙
Name").Object
TheAddIn.SomeSubOrFunc
```

*(Key: ↙ code string continues)*

This means you may well need code in a Word or Excel template as well as your add-in. It also uses late binding, which carries a performance penalty.

A VSTO application has its own issues. Although it is loaded with its associated document, the VSTO assembly is pretty much invisible to the host application. Hooking up code to events has to be done in VSTO code. That sounds fine, until you need to do something such as have a keyboard shortcut in Word call a VSTO method, or use a VSTO User Defined Function in Excel. In this case, you need to use a VBA wrapper, mark VSTO methods you want to expose with the Comvisible attribute and have your VSTO code call the wrapper to pass a reference to itself, so that VBA can keep the reference and call it back. Another issue is that VSTO applications are document-centric. You cannot create a global template with VSTO, although you can create document templates. If you need to work at the application level, a COM add-in is a better solution. There are also security issues if you need to deploy signed code. Finally, any .Net code that automates Office or runs as an add-in is doing heavy COM interop. This has its own snags, such as awkward syntax and potentially obscure failures.

### The right technology

As languages, VB.Net and C# are more modern, more powerful, and supported by a richer class library than VBA in Office. That doesn't necessarily make .Net the best choice for an Office solution. If your application is heavily weighted towards Office automation, using VBA or VB 6 may be the best choice. For quick and dirty code and easy integration, old-style VBA in templates and documents is best, while a VB 6 COM add-in is more elegant and should perform better.

Separating the code from the document means easier maintenance. If your application spends most of its time running its own code rather than interacting with Office, .Net is a good choice and comes into its own when you need to integrate with other .Net code or XML web services. It's also worth keeping an eye on VSTO 2, which is a big advance over the previous version, although most of the same fundamental issues exist.

A more complete example of controlling Windows Media Player from Word can be found at: **http://www.itwriting.com/pcw**.

**CONTACTS**

**Tim Anderson welcomes your comments on the Visual programming column. Email him at: visual@pcw.co.uk. Please do not send unsolicited file attachments.**



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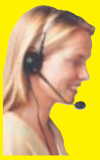

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TYM78/AMD(PCW/05)02

# Leisure

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**LOADING...**

### Play C64 games again

By today's standards, the Commodore 64 was extremely inept. Games could be bought for very little money, but they took forever to load, were often unreliable and unsophisticated.

It may seem unusual then for a company to release 30 of the C64's most popular games wrapped up in the body of an authentic Competition Pro 5000 Joystick. The Commodore 64 Direct To TV (DTV) connects to your television via a two-pronged coaxial lead, and draws power from a set of four AA batteries.

Games (stored on internal memory) can be accessed through an on-screen menu. These include the likes of Pitstop 2, Summer Games, Uridium, Impossible Mission, Jumpman Junior, and the legendary Speedball.

The Commodore 64 DTV loads its games from memory almost instantly – a far cry from the original Commodore 64, which tested gamers' patience with painfully long loading times.

Available through **www.gadgets.co.uk**, the DTV costs £24.99 excluding delivery.

# Second Sight

## Psychic powers and the quest for truth provide a gripping storyline

The atmospheric introduction to Second Sight immediately sets the scene with dramatic camera angles and an edgy soundtrack, suggesting this isn't your run-of-the-mill shoot-'em-up.

John Vattic, a former researcher, wakes to find himself in a medical detention facility with no recollection of his identity. He is accused of a string of violent murders, and it's up to you to piece together his past through a series of playable flashbacks, during which time you'll also discover Vattic's new-found psychic powers.

As the game progresses, you'll learn how to use thought control to heal yourself, manipulate people and objects, and release powerful bursts of energy to knock down those who stand in the way of your quest for the truth.

Second Sight's dual storyline is addictive. Each flashback provides more details as to how Vattic ended up in the research facility and why he is being persecuted. As with a good book, you're eager to continue through the game and find the answers to many questions.

Though Second Sight involves substantial gunplay, the game requires you to think before you shoot. More often than not, you can creep past security guards or use your psychic abilities to control them. Unfortunately, it can be a little too easy to hide away until the coast is clear. After gunning down more than a dozen guards we managed to creep into a nearby cupboard and hide. Despite the floor being littered with bloody corpses, it didn't take long for the security forces to declare that everything was back to normal.

Sadly, gameplay is hampered somewhat by the game's camera angles. The fixed camera option works well in most situations, but during fight sequences it's hard to accurately attack the enemy. You can switch to a floating, player-controlled camera, but we found ourselves relying on the auto-aim feature to lock on to enemies instead of using pure skill.

Second Sight will only be appreciated by those willing to get involved in the storyline. The countless cut-scenes will probably infuriate trigger-happy gamers who simply want to find their next target. However, if you want a well thought-out game that requires you to use your head as well as your gun, Second Sight delivers the goods.

**Will Stapley**

**DETAILS**

**PRICE** £34.99 inc VAT
**CONTACT** Codemasters
**www.codemasters.co.uk**
**SYSTEM REQUIREMENTS**
Windows XP/2000 • Pentium III • 256MB of Ram • 1GB of hard disk space
**VERDICT**
**Gameplay takes some getting used to, but an enthralling storyline keeps you gripped right to the end**
**OVERALL** ★★★★½

**You can release powerful bursts of energy to knock down enemies**



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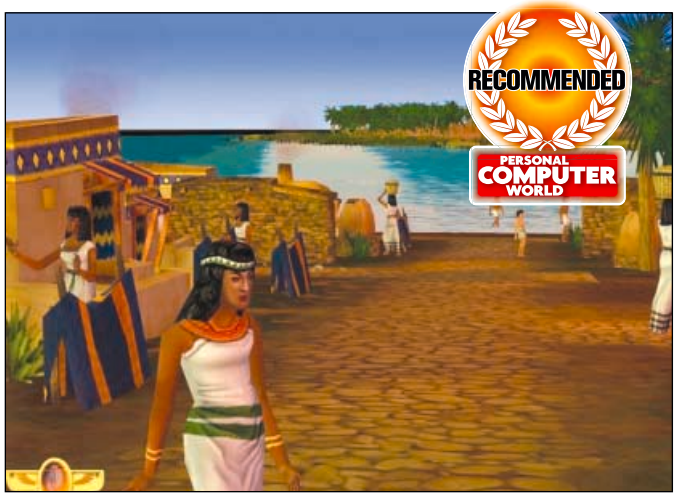
# Children of the Nile

## Erect statues and father a nation




Immortal Cities: Children of the Nile is something of a departure from Sega's usual offerings. As a realtime strategy game, it couldn't be further removed from the fast-paced arcade titles (Crazy Taxi and Daytona USA) that helped cement the company's success.

Fortunately, any fears of a misguided change of direction on Sega's part are quickly allayed. Rather than the usual world war-based strategy games that dominate the genre, this takes a path less trodden. Players assume the role of a series of Pharaohs who are responsible for leading Egypt through times of war and peace.

Whereas most games of this type focus almost exclusively on the management of physical assets, Children of the Nile places great emphasis on the inhabitants of your virtual cities. You'll need to carry out the usual task of building an efficient economy, but as each member of your society belongs to a household with specific needs, you'll often have to sacrifice grand aspirations in favour of ensuring their happiness.

You'll also have to ensure the right types of citizens are in place, or the entire city will be doomed to failure. Farmers are required to tend crops, and nobles to oversee large farming estates. Your ultimate aim, though, is to acquire enough prestige points to ensure your legacy is not forgotten.

There are several ways of doing this, including erecting statues and pyramids to commemorate victories in battle. The constant (and often unreasonable) desires of your city's inhabitants make the game something of a challenge, albeit an enjoyable one.

Ultimately, the game is one of the most enjoyable city-building strategy games we've seen in some time, and the hands-on approach required to pacify its virtual inhabitants only serves to reinforce its appeal.

**Rory Reid**

**DETAILS**

**PRICE** £34.99 inc VAT
**CONTACT** Sega
**www.sega.co.uk**
**SYSTEM REQUIREMENTS**
Windows 98/ME/2000/XP • Pentium III 800MHz or AMD Athlon equivalent • 128MB of Ram • 1.1GB hard disk space • 32MB DirectX 9.0b compatible graphics card • DirectX 9 compatible soundcard • CD-Rom drive
**VERDICT**
**An engaging and varied distraction from the glut of WW2 strategy games**
**OVERALL** ★★★★★

# Heritage of Kings

## Join Dario's search for the Orb of Power

Heritage of Kings, the latest addition to the Settlers series, uses Criterion's three-dimensional Renderware graphics engine. Whereas its predecessor had a cartoony appearance, this outing is darker and more realistic.

Despite this dramatic change of style, the core gameplay remains familiar. Players take primary control of a character called Dario, who must lead a group of medieval settlers, conquer a realm, and retrieve an Orb of Power.

The single-player campaign features 20 missions, the majority of which are spent managing assets and fending off opposing forces. There are 40 different character types and 70 building types available, but the bulk of your work usually involves Serfs, who collect resources and construct buildings in exchange for food and shelter.

Building a barracks and ensuring there are enough troop leaders will lead to an increase in the number of troops, which are vital if you are to protect your settlement. Unfortunately, most battles aren't very believable, since you'll regularly see face-to-face clashes between archers and swordsmen.

One of the most attractive elements of The Settlers is what its developers describe as its 'anthill factor'; the game is positively buzzing with activity.

Creating a settlement and watching it thrive can be satisfying, but the game's realistic art design may alienate fans that prefer a more light-hearted approach. We also enjoyed the game's excellent musical score, although this was let down somewhat by repetitive vocal announcements.

On the whole, Heritage of Kings is an enjoyable depiction of medieval times that can draw you in for hours at a time. It is by no means the finest example of its genre but, for fans of the series, it is certainly worth picking up.

**Rory Reid**

**DETAILS**

**PRICE** £34.99 inc VAT
**CONTACT** Ubi Soft
**www.ubi.com/uk**
**SYSTEM REQUIREMENTS**
Windows 98SE/ME/2000/XP • 1GHz processor • 256MB of Ram • 32MB T&L • graphics card • DirectX 9.0c • DirectX 9.0c compatible soundcard • 1.5GB hard drive space
**VERDICT**
**A good evolution of the long-running series, but it lacks the polish we expected**
**OVERALL** ★★★★½



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E-code: 10025

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### Tiny LCD TV27

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Includes our top spec Focus 42" 4200 Plasma TV Package **PLUS** Tiny DR50 DVD Recorder **PLUS** Tiny 5.1 AMP A4 **PLUS** Tiny FS600 5.1 Floor Standing Premium speaker system **PLUS** Tiny PT40 Glass Plasma Table
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**Options:** Some options are already bundled in with the TV packages and screens

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| Plasma Table PT40 (3 shelf) | £399 | 5.1 AMP A2 | £199 |
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HCM16/AMD(PCW/05)

Picture courtesy of www.old-computers.com

# IBM 5170 PC/AT

## It might be over 20 years old, but the 5170 PC/AT's influence can still be seen in today's PCs

In an industry where some of the most established players are less than 30 years old, IBM is truly the grandaddy of them all. The company can be traced back to Herman Hollerith, who in 1890 won a US Census Bureau contest to find a more efficient way of handling its data.

Hollerith later formed his own company which, in 1911, merged with two others. Tom Watson was then hired to manage the operation, becoming president within a year and changing the company's name to International Business Machines, IBM.

From the launch of its first computer in 1944 – a 50ft, five-ton beast – IBM would become synonymous with computing. During the early 1970s, though, the first microprocessors arrived from new companies such as Intel and MOS Technologies, in turn allowing affordable PCs to be built. The first models may have been designed and assembled by enthusiasts but, by the end of the decade, affordable PCs from new companies led by Apple, Commodore, Tandy and Atari were taking the world by storm.

IBM realised the only way it could compete was to form a breakaway team that could operate independently. In 1980, a dozen researchers were assembled with the brief to develop the IBM PC, and given permission to source components from wherever they wanted. The team bought in Intel's new 4.77MHz 8088 processor and a rebranded operating system from Microsoft.

IBM's 5150 PC was launched on 13 August 1981 and quickly attracted software developers and business customers. The biggest threat to IBM's PC business though was not from rival platforms, but a clone of its own technology. In November 1982, a new company called Compaq legally produced an IBM PC clone by reverse-engineering its Bios.

IBM didn't stand still. In 1983, it launched the PC Extended Technology, XT for short, which was the first PC in its class to feature a built-in hard disk. That said, the XT was little more than the original PC with additional storage – the cloners were quick to release their own versions.

IBM had, however, begun to develop a new Advanced Technology PC architecture, or PC/AT for short. The project's chief engineer was Mark Dean. Dean's team selected Intel's latest 16bit 80286 microprocessor and extended the ISA bus to handle 16 bits of data. The debut 5170 model ran at 6MHz, was equipped with 256KB of Ram, a 1.2KB floppy disk, Microsoft Dos 3 and a new 101-key keyboard. It was launched in1984 for $3,995, without the optional hard disk. The cloners soon followed.

The standard gained pace, with IBM PC-compatibility quickly becoming seen as essential to survive in business.

Unfortunately for IBM, most of the money was being earned by the suppliers it had selected to assemble the original PC. The biggest winners were Intel and Microsoft, which sold processors and operating systems for each and every IBM-compatible PC.

IBM needed to get back control of the PC market and, therefore, developed the PS/2 platform and Micro Channel Architecture (MCA) which it hoped to license to the industry. Unlike the PC, XT and AT platforms though, few manufacturers or customers took up IBM on its new technology.

Even worse, the larger clone companies began enhancing the AT architecture themselves. In response to MCA, Compaq developed its own expansion bus, and even beat IBM to shipping the first PC based on Intel's new 32bit 80386 processor. By the early 1990s, Intel took the lead in further developing the PC architecture with technologies including PCI.

The PC/AT of 1984 was the last time IBM played a defining role in the PC market; but despite two decades of speed and storage hikes, a surprising degree of the original platform remains. Today's keyboards use the same layout which made its debut in 1984. The letters A and C are still used to label the first floppy and hard disk drives, and slots employing Dean's 16bit ISA bus were even seen on motherboards launched as recently as 2000.

IBM may have lost out to the clones, but it was the sheer momentum of these affordable versions which cemented it as the business standard. Indeed, cheap but powerful clones were such no-brainers that, by the early 1990s, they'd even become the standard for home use. By this point though, few people talked of IBM-compatible PCs. Microsoft and Intel were now the brands most associated with desktop computing. Both must look back very fondly on the day 25 years ago when each was selected by IBM for its new PC project.

**Gordon Laing**



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# EMC Clariion AX100 and software bundle

If you're a network administrator, you're probably familiar with the hassles of juggling storage space on your server. Now one reader has the chance to eliminate these worries, as information storage and management specialist EMC is giving away a Clariion AX100, a customer-installable direct attached networked storage system that can store up to 3TB of data.

This is, of course, the maximum theoretical capacity, but to get you started, EMC has installed 12 160GB disks in a Raid 5 (11+1) configuration, to provide a generous 1,528GB of usable storage space. Being a network storage solution, the AX100 allows you to move away from internal server-based disks which can often be restrictive.

To help make the most of the Clariion AX100's massive capacity, EMC is also giving away a generous software bundle.

This includes Legato Networker, which can centralise backups across separate offices; Replistor, which can back up data across Lan and Wan environments; and Dantz Retrospect. Retrospect provides business-class data protection for file servers, desktops, notebooks and business-critical applications.

For more information on EMC's products and services, visit **http://uk.emc.com** or for your chance to win a Clariion AX100 worth over £6,000, answer the question below and follow the instructions on how to enter.

**What is the maximum storage capacity of the EMC Clariion AX100?**

**a) 256K**
**b) 30GB**
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## PCW MAY 2005 EMC COMPETITION ENTRY FORM

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PERSONAL COMPUTER WORLD

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These competitions are open to readers of *PCW*, except for employees (and their families) of VNU Business Publications, EMC and Avermedia. *PCW* is the sole judge of the competitions and the Editor's choice is final. Winners will be selected at random from all correct entries received. No cash alternative is available in lieu of prizes. VNU will use all reasonable endeavours to notify the winner(s) within 14 days of the close of the competitions. Prizes will be dispatched direct by the competition sponsor(s) and the winner(s) name(s) and address(es) will be provided to the competition sponsor(s) for this purpose. No purchase of the magazine is necessary to enter the competitions. VNU will use all reasonable efforts to ensure that the prizes are as described on this page. However, VNU cannot accept any liability in respect of any prize, and any queries regarding a prize should be taken up directly with the sponsor of that prize.

## March winners

The winner of the Evesham Ebox is DH Andreae from Solihull, and the winners of the Gigabyte upgrade bundles are MC Freeman from Hertfordshire, A Mcdonald from Torquay, Eric Taylor from Hook and Trevor Hunt from Devon.


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# Avermedia DVD EZ maker 1394 PCI editing kit

Multimedia hardware specialist Avermedia is giving 10 readers the chance to win a DVD editing kit. The DVD EZ Maker 1394 PCI lets you transfer your videos from a digital camcorder to a PC, edit them to look like professional movies and store them on a VCD or DVD disc.

The Avermedia DVD EZ Maker 1394 PCI can transfer large video files quickly and easily thanks to its high-speed Firewire interface. Four ports are available (three external and one internal), so you can connect more than one device at a time.

The accompanying Ulead DVD Moviefactory 2 SE software gives you a great deal of flexibility when creating your DVD movie.

It allows DVD menu creation, supports Dolby Digital audio and has a useful 'edit disc' mode that lets you edit an existing DVD and then re-record it to a new writable disc.

If you've got loads of old home movies on VHS cassette, the DVD EZ Maker 1394 is a great way of bringing them all up to date. You'll easily be able to make multiple copies so when you're finished you can share your creations with friends and family and preserve them forever.

For more information visit **www.averm.co.uk** or for your chance to win a DVD EZ Maker 1394 PCI, simply answer the question below and follow the instructions on how to enter.

**What type of connection does the DVD EZ Maker 1394 PCI use?**

**a) Firewire**
**b) USB**
**c) Bluetooth**

## How to enter

Fill in the coupon and send to the following address by 15 April 2005:
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Or **enter online** at **www.pcw.co.uk/Competition**.

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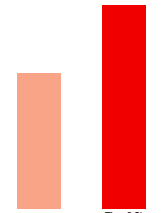


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| HP Laserjet 2100/2200 (C4096A) | £48 |
| HP Laserjet 4000/4050 (C4127X) | £64 |

TDK CD-R90 90Min / 800Mb RECORDABLE £8.50 for 10

iMation CD-R23 8Cm / 23Min RECORDABLE £3.50 for 5

# Inkjet Supplies

## Canon Inkjet Cartridges

| | Black | Colour |
|---|---|---|
| BJ10E/EX/20 (BC01) | £14 | |
| BJ200/E/X/230 (BC02) | £14 | |
| BJC210/240/250 (BC02/BC05) | £14 .. | £18 |
| BJ30/BJC50/70/80/85 (BC10E) | £22 | |
| BJ30/BJC50/70/80/85 Tanks 3's (BCI10) | £12 | |
| BJC50/70/80/85 (BC11E) | £25 | |
| BJC50/70/80/85 Tanks 3's (BCI11) | £10 .. | £13 |
| S200/S300 (BCI24BK/BCI24C) | £6 .. | £11 |
| S200/S300 TWIN Pk (BCI24BK/BCI24C) | £11 .. | £20 |
| BJC2000/4000/5000 Series (BC20E/21E) | £21 .. | £28 |
| BJC2000/4000/5000 Series Tanks (BCI21) | £5 .. | £12 |
| BJC3000/S400 (BC33) | | £38 |
| BJC3/6000/S400 Tanks (BCI3B/3C/3M/3Y) | £7 .. | £6 |
| BJC6000/6100/6200/6500 . (BC30/31) | £26 .. | £29 |
| BJC7000/7100 (BC60/61) | £26 .. | £28 |
| BJC7000/7100 Colour Ink Tank (BCI61) | | £18 |
| BJC7000/7100 Photo Cart (BC62) | | £39 |
| BJC7000/7100 . Photo Ink Tank (BCI62) | | £24 |
| S800/BJC8200 Photo Ink Cart (BC50) | | £75 |
| S800/BJC8200 Tanks (BCI6BK/6C/6M/6Y) | £8 .. | £8 |
| S800/BJC8200 Photo Ink (BCI6PC/6PM) | | £8 |

## Canon Inkjet Paper Media

| | A4 | A3 |
|---|---|---|
| Coated Paper (200) (LC101) | £22 .. | £42 |
| High Resolution (200/20) (HR101) | £22 .. | £6 |
| Glossy Paper.. (20) (GP301) | .. £9 .. | £15 |
| Photo Paper Pro (8200) .. (15) (PR101) | .£11 | |
| Photo Paper Pro 4"x6" .. (20) (PC101) | .£10 | |
| Glossy Photo Card 4"x6" (20) (FM101) | .... £6 | |

# Compatible Cartridges

## Compatible Inkjet Cartridges

| | Black | Colour |
|---|---|---|
| Epson 400/600 (JT093/JT089) | .. £5 .... | £8 |
| Epson 800/1520 (JT108/JT089) | .... £6 .... | £8 |
| Epson 440/640 (JT187/JT191) | .. £5 .... | £8 |
| Epson 740 (JT189/JT191) | .... £6 .... | £8 |
| Epson 480/580/C20/C40 (JT013/JT014) | .... £5 .... | £8 |
| Epson 680 (JT017/JT018) | .... £9 .. | £12 |
| Epson 880 (JT019/JT020) | .... £6 .... | £9 |
| Epson 790/870/890/895 (JT007/JT008) | .... £9 .... | £8 |
| Epson P 810/830/925 .. (JT026/JT027) | .... £9 .. | £11 |
| Epson C42 (JT036/JT037) | .... £5 .... | £8 |
| Epson C60/C61 (JT028/JT029) | .... £9 .. | £11 |
| Epson C62/CX3200 (JT040/JT041) | .... £9 .. | £11 |
| Epson C64 (431/442/443/444) | £14 CMY | £7 |
| Epson C70/80 (321/324/334/344) | £14 CMY | £7 |
| Epson C82/CX5400 (321/422/423/424) | £14 CMY | £7 |
| Epson C84 (441/442/443/444) | £14 CMY | £7 |
| Epson CX6400 (441/452/453/454) | £14 CMY | £7 |
| Epson R200/300/RX500 (481/2/3/4/5/6) | .... £6 CMY | £6 |

## Color Copy Paper (Laser)

| | A4 | A3 | A3x |
|---|---|---|---|
| Ultra Smooth (100gsm) 500's .. | £12 | £24 .. | £26 |
| Ultra Smooth (120gsm) 500's .. | £15 | £29 .. | £32 |
| Ultra Smooth (160gsm) 250's .. | £19 | £22 .. | £24 |
| Ultra Smooth (200gsm) 250's | | £24 | |
| Ultra Smooth (200gsm) 200's .. | £18 | ..... | £24 |

## HP Inkjet Cartridges

| | Black | Colour |
|---|---|---|
| Deskjet 610/612/640 (6614D/49A) | . £17 ... | £19 |
| Deskjet 810/PSC500 (6615D/23D) | . £17 ... | £19 |
| Deskjet 816/825/840/845 .. (6615D/25A) | . £17 ... | £19 |
| Deskjet 920/940/V40/V45 (15D/6578D) | . £17 ... | £19 |
| Deskjet PSC750/PSC950 (15D/6578D) | . £17 ... | £19 |
| Deskjet 820/50/70/1100 (45A/41A) | . £17 ... | £20 |
| Deskjet 720/815/890/1120 (45A/23D) | £17 ... | £19 |
| Officejet T45/T65/R45/R65 .. (45A/23D) | £17 ... | £19 |
| Deskjet 930/950/970/1220 (45A/78D) | £17 ... | £19 |
| Deskjet G55/85/95/K60/80 .. (45A/78D) | £17 ... | £19 |
| PhotoSmart P1000/P1100 (45A/78D) | . £17 ... | £19 |
| PSC 26-2710/81-8450 (Low - 338/343) | . £13 ... | £16 |
| PSC 26-2710/81-8450 (High - 339/344) | . £17 ... | £19 |
| Deskjet 2000/2500 . (44A/41C/42Y/43M) | . £21 ... | £22 |
| Deskjet 2200/2250 . (44A/36C/37M/38Y) | . £21 ... | £22 |
| Deskjet CP1700 .... (44A/36C/37M/38Y) | . £21 ... | £22 |
| Deskjet 3320/3420 (8727A/28A) | . £12 ... | £14 |
| Deskjet 5550/PS7000 Series . (56A/57A) | . £12 ... | £18 |
| Deskjet 5550/PS7000 ... Photo (6658A) | ..... | £18 |
| CP1160/OJ 7110/D Series (5011D/10D) | . £14 ... | £18 |
| CP1160/OJ 7110/D .. (Printhead No.14) | . £28 ... | £28 |
| Designjet 10/20/50PS (36C/37M No.11) | ..... | £22 |
| Designjet 10/20/50PS .. (84K/C/M/82Y) | . £23 ... | £23 |

## HP A4 Paper Media

| | Pack | Price |
|---|---|---|
| Premium+ Glossy Photo .. (C7040A) | ... 50 ... | £19 |
| Premium+ Photo Glossy .. (C6832A) | ... 20 ... | £13 |
| Premium+ Photo Matte .... (C6951A) | ... 20 ... | £14 |
| Premium Glossy Photo .... (Q1992A) | ... 10 ..... | £7 |
| Premium Glossy Paper .... (C3831A) | ... 10 ..... | £9 |
| Premium HeavyWeight 2-Side (C1853A) | . 100 .. | £12 |
| Photo Quality Inkjet Paper . (C6984A) | ... 20 ..... | £6 |
| Premium Transparency ..... (C3832A) | ... 20 ... | £14 |
| Iron-On T-Shirt Media ..... (C6050A) | ... 10 ... | £13 |

## HP 10x15cm Paper Media

| | Pack | Price |
|---|---|---|
| Glossy Photo 10x15cm ..... (C7894A) | ... 60 ... | £10 |
| Glossy Photo 10x15cm ..... (C7891A) | ... 20 ..... | £4 |
| Premium+ 10x15cm Photo (Q1991A) | ... 20 ..... | £7 |

## HP A3/A4 Paper Media

| | A4 | A3 |
|---|---|---|
| Professional Brochure/Flyer (50) (C6818/21A) | .... £9 ... | £18 |
| Premium Inkjet (A4-200/A3-100) (51634/1856A) | . £14 ... | £22 |
| Premium Photo . (A4-15/A3-20) (C6040/59A) | .... £7 ... | £29 |
| Bright White . (A4-500/A3-200) (C1825/1858A) | .... £7 ... | £10 |

## HP A3+ Proofing Paper Media

| | Pack | Price |
|---|---|---|
| Proofing Semi Gloss (150gsm) (7884A) | ... 50 ... | £96 |
| Proofing Gloss & Proofing Matte | ..... | POA |

# Other Inkjet Supplies

## Apple/Lexmark/Olivetti

| | Black | Colour |
|---|---|---|
| Apple S/Writer I/II/1200 (8041) | £16 | |
| Apple S/Writer 2200 & 2400/2500 | ..... | AS CANON |
| Lexmark 150/1000/2000 (13400/13619) | £20 ... | £21 |
| Lexmark 32/50/7000/Z11 (A1970/1980) | . £18 ... | £20 |
| Lexmark Z42/43/Z51/52 (A1970/M0120) | . £18 ... | £22 |
| Lexmark X73/X83/X85 (A1970/M0120) | . £18 ... | £22 |
| Lexmark Z12/Z22/Z32 ... (17G0050/60) | . £18 ... | £19 |
| Lexmark Z13/23/33/X75 (High - 016/026) | £18 ... | £20 |
| Lexmark Z13/23/33/X75 (Low - 217/227) | . £13 ... | £14 |
| Lexmark Z55/Z65/Z65N (18L0032/42) | . £18 ... | £21 |
| Olivetti JP170/190/360/450 . Mono/Col | . £24 ... | £32 |

# LASER PRINTER SUPPLIES

## TONERS CMYK TONERS DRUMS PHOTOCONDUCTORS DEVELOPERS FUSERS

### PHOTOCONDUCTOR / FUSER / TONER / DRUM

| | |
|---|---|
| Apple L/Writer Select 300/310/360 .. (1960) | £65 |
| Apple Personal L/W 300/320/4-600 . (2045) | £56 |
| Apple LaserWriter 12/640PS (4683) | £85 |
| Apple LaserWriter Pro16/600/630/800 (2473) | £65 |
| Apple LaserWriter 8500 (5893) | £185 |
| Brother HL730/760/FAX-8/9000 . (TN/DR200) | £18 ..... £89 |
| Brother HL820/1051/1060 (TN/DR300) | £18 ..... £89 |
| Brother HL1240/50/70 Hi-Yield (TN6600/DR6000) | £49 ..... £89 |
| Brother HL1650/5000 Hi-Yield (TN7600/DR7000) | £52 ..... £99 |
| Epson AcuLaser C900/1900 (50100/99C/98M/97Y) | £34 CMY £95 |
| Epson AcuLaser C1/2000 (50033/34Y/35M/36C) | £46 CMY £89 |
| Epson AcuLaser C4000 (50091/89Y/89M/90C) | £30 CMY £129 |
| Epson AcuLaser C4100 (50149/46C/47M/48Y) | £99 CMY £179 |
| Samsung CLP500 ..... (D7K/D5Y/D5M/D5C) | £66 CMY £76 |
| Samsung ML1650/1651 (ML1650) | £79 |
| Samsung ML2150/2151N/2152W (ML2150) | £79 |
| Samsung ML4500/ML4600 (ML4500) | £49 |
| Samsung ML6040/6060 (ML6060) | £69 |

### PHOTOCONDUCTOR / FUSER / TONER / DRUM

| | | |
|---|---|---|
| Hewlett Packard Toners | Std .... | High |
| HP Laserjet 4 / 4M / 5 / 5N / 5M ... (92298A/X) | £52 ..... | £62 |
| HP Laserjet 5L / 6L / 3100 / 3150 .... (C3906A) | £34 | |
| HP Laserjet 5P / 5MP / 6P / 6MP ... (C3903A) | £46 | |
| HP Laserjet 1010 / 1012/1015 ..... (Q2612A) | £46 | |
| HP Laserjet 1100 / 1100A ..... (C4092A) | £34 | |
| HP Laserjet 1150 ..... (Q2624A) | £45 | |
| HP Laserjet 1160/1320 ..... (Q5949A/X) | £42 ..... | £79 |
| HP Laserjet 1200 / 1220 ..... (C7115A/X) | £35 ..... | £45 |
| HP Laserjet 1300 ..... (Q2613A) | £40 | |
| HP Laserjet 2100 / 2200 ..... (C4096A) | £56 | |
| HP Laserjet 2300 ..... (Q2610A) | £66 | |
| HP Laserjet 4000 / 4050 ..... (C4127A/X) | £62 ..... | £72 |
| HP Laserjet 4100 ..... (C8061X) | £62 ..... | £72 |
| HP Laserjet 4200 ..... High Yield (Q1338A) | £84 | |
| HP Laserjet 4300 ..... High Yield (Q1339A) | £109 | |
| HP Laserjet 5Si / 5SiMX / 8000 ..... (C3909A) | £96 | |
| HP Laserjet 5000 / 5000N/5000GN (C4129X) | £89 | |

## HEWLETT PACKARD - TONERS

| | Black | Colour |
|---|---|---|
| HP Color L/jet 15/2500 .. (C9700A/01A/02A/03A) | . £45 CMY | £55 |
| HP Color L/jet 2550 (High - Q3960A/61A/62A/63A) | £45 CMY | £55 |
| HP Color L/jet 2550 (Low - Q3960A/71A/72A/73A) | . £45 CMY | £40 |
| HP Color Laserjet 3500 (Q2670A/71A/72A/73A) | . £79 CMY | £79 |
| HP Color Laserjet 3700 (Q2670A/81A/82A/83A) | . £79 CMY | £105 |
| HP Color Laserjet 4500 . (C4191A/92A/93A/94A) | . £55 CMY | £79 |
| HP Color Laserjet 4600 . (C9720A/21A/22A/23A) | . £85 CMY | £115 |
| HP Color Laserjet 5500 . (C9730A/31A/32A/33A) | £125 CMY | £175 |

## QMS Toner Value Kits

| | | |
|---|---|---|
| QMS MagicColor 2200/2210 | 4-Toners . | £275 |
| QMS MagicColor 2300/50HC | 3-Toners . | £216 |
| QMS MagicColor 3300 | 4-Toners . | £336 |
| QMS MagicColor 2200/2210 .. | (BK/C/M/Y) | £49 CMY £90 |
| QMS MagicColor 2300/50HC | (BK/C/M/Y) | £55 CMY £79 |
| QMS MagicColor 3100 | (BK/C/M/Y) | £49 CMY £125 |
| QMS MagicColor 3300 | (BK/C/M/Y) | £47 CMY £112 |
| QMS MagicColor 6100 | (BK/C/M/Y) | £115 CMY £150 |
| QMS MagicColor 7300 | (BK/C/M/Y) | £49 CMY £79 |

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## Epson Inkjet Cartridges

| | Black | Colour |
|---|---|---|
| Stylus All Older Models | ..... POA . | POA |
| Stylus 440/460/640/660/670 . (187/191) | . £15 ... | £16 |
| Stylus 740/760/860/1160 ..... (189/191) | . £16 ... | £16 |
| Stylus 480/580/C20/C40 .. (T013/T014) | . £11 ... | £14 |
| Stylus 680/680T ..... (T017/T018) | . £20 ... | £17 |
| Stylus 880 ..... (T019/T020) | . £20 ... | £17 |
| Stylus 900/980 ..... (T003/T005) | . £20 ... | £24 |
| Stylus P 790/870/890/915 (T007/T008) | . £15 ... | £12 |
| Stylus Photo 1270/1290 .. (T007/T009) | . £15 ... | £17 |
| Stylus Photo 810/830/925 (T026/T027) | . £19 ... | £16 |
| Stylus Photo 950 ..... (T331/2/3/4/5/6) | £10 CMY | £10 |
| Stylus Photo 2100 .. (T341/3/4/5/6/7/8) | £11 CMY | £11 |
| Stylus Photo 2000P ..... (T015/T016) | £22 .. | £25 |
| Stylus Photo R200/300 (T481/2/3/4/5/6) | ... £9 CMY | £9 |
| Stylus Photo RX500/600 (T481/2/3/4/5/6) | .... £9 CMY | £9 |
| Stylus Photo R800 . (T5?? ALL 8 COLS) | £10 CMY | £10 |
| Stylus C42/C44/C46 ..... (T036/T037) | . £12 ... | £15 |
| Stylus C60/C61 ..... (T028/T029) | . £22 ... | £18 |
| Stylus C62/CX3200 ..... (T040/T041) | . £22 ... | £18 |
| Stylus C70/80 . (T321/C322/M323/324) | £23 CMY | £10 |
| Stylus C82/CX5400 (T321/422/423/424) | £23 CMY | £10 |
| Stylus C64/66 (T441/C442/M443/Y444) | £16 CMY | £10 |
| Stylus C84/86 (T431/C442/M443/Y444) | £23 CMY | £10 |
| Stylus CX6400 (T441/C452/M453/Y454) | £23 CMY | £10 |
| Stylus Pro4000/9600 HighCap.(All Cols) | £49 CMY | £49 |
| Stylus Pro5500 (T486/487Y/488M/489C) | £49 CMY | £49 |
| Stylus Pro7000 (All 6 Cols - Price Each) | £31 CMY | £31 |
| Stylus Pro7500 (All 6 Cols - Price Each) | £38 CMY | £38 |
| Stylus Pro7600/9600 Standard (All Cols) | £32 CMY | £32 |
| Stylus Pro7600/9600 HighCap (All Cols) | £49 CMY | £49 |
| Stylus Pro9000 (All 6 Cols - Price Each) | £47 CMY | £47 |
| Stylus Pro9500 (All 6 Cols - Price Each) | £60 CMY | £60 |

## Epson Stylus Paper Media

| | Pack | Price |
|---|---|---|
| Premium Glossy Photo Roll 100mm (41303) | 1x8m . | £12 |
| Premium Semi-Gloss Roll 100mm . (41330) | 1x8m . | £13 |
| Premium Glossy PhotoRoll 210mm (41377) | 1x10m | £30 |
| Premium Semi-Gloss Roll 210mm . (41336) | 1x10m | £32 |
| Premium Glossy PhotoRoll 329mm (41379) | 1x10m | £42 |
| Premium Semi-Gloss Roll 329mm . (41338) | 1x10m | £44 |
| A4 Colorlife Photo ..... (41560) | .. 20 .. | £15 |
| A4 Premium Glossy ..... (41287) | .. 20 .. | £11 |
| A4 Premium Glossy ..... (41624) | .. 50 .. | £24 |
| A4 Premium Semi-Gloss ..... (41332) | .. 20 .. | £11 |
| A4 Glossy Photo Weight ..... (41349) | .. 20 .. | £10 |
| A4 Photo Glossy ..... (41126) | .. 20 .... | £8 |
| A4 Photo Glossy ..... (41620) | .. 50 .. | £18 |
| A4 Photo Paper ..... (41140) | .. 20 .. | £10 |
| A4 Photo Paper ..... (41622) | .. 50 .. | £22 |
| A4 Archival Matte Paper ..... (41342) | .. 50 .. | £11 |
| A4 Matte HeavyWeight ..... (41256) | .. 50 .. | £10 |
| A4 Matte H/W Double Sided (41569) | .. 50 .. | £14 |
| A4 720/1440 Dpi Photo Quality . (41061) | 100 .. | £10 |
| A4 Transparency ..... (41063) | .. 30 .. | £36 |
| A3 Colorlife Photo ..... (41561) | .. 20 .. | £40 |
| A3 Premium Glossy ..... (41315) | .. 20 .. | £24 |
| A3 Premium Semi-Gloss ..... (41334) | .. 20 .. | £25 |
| A3 Glossy Photo Weight ..... (41350) | .. 20 .. | £23 |
| A3 Glossy Film ..... (41073) | .. 10 .. | £40 |
| A3 Photo Glossy ..... (41125) | .. 20 .. | £18 |
| A3 Photo Paper ..... (41142) | .. 20 .. | £21 |
| A3 Archival Matte Paper ..... (41344) | .. 50 .. | £23 |
| A3 Matte HeavyWeight ..... (41261) | .. 50 .. | £22 |
| A3 720/1440 Dpi Photo Quality . (41068) | 100 .. | £26 |
| A3+ Professional (Pro-5500) ..... (41457) | .. 20 .. | £49 |
| A3+ Water Colour Radiant White (41352) | .. 20 .. | £20 |
| A3+ Premium Glossy ..... (41316) | .. 20 .. | £31 |
| A3+ Premium Semi-Gloss ... (41328) | .. 20 .. | £32 |
| A3+ Glossy Photo Weight .. (41347) | .. 20 .. | £29 |
| A3+ Glossy Film ..... (41074) | .. 10 .. | £48 |
| A3+ Photo Glossy ..... (41133) | .. 20 .. | £20 |
| A3+ Photo Paper ..... (41143) | .. 20 .. | £25 |
| A3+ Archival Matte Paper .... (41340) | .. 50 .. | £30 |
| A3+ Matte HeavyWeight ..... (41264) | .. 50 .. | £28 |
| A3+ 720/1440Dpi Photo Quality (41069) | 100 .. | £30 |
| A2 Photo Glossy ..... (41123) | .. 20 .. | £35 |
| A2 720/1440 Dpi Photo Quality . (41079) | .. 30 .. | £24 |

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- Logitech Optical Wheel Mouse
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- 56.6K V92 Modem
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- 2x Front USB 2.0, 2xFirewire, SATA Raid 0, 1, 5
- AMD 64bit 3000+
- 512MB PC3200 DDR RAM
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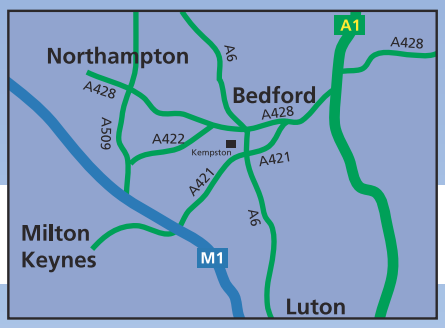


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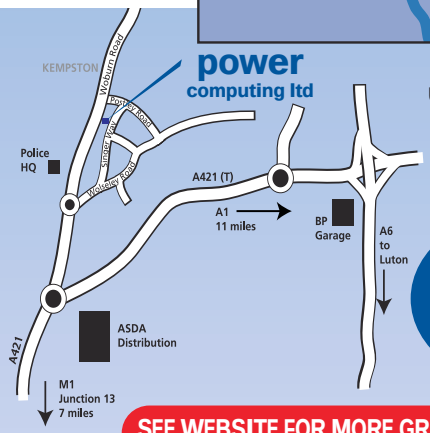


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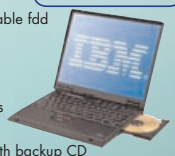

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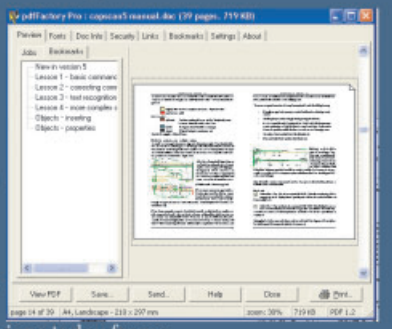

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# Offers Direct

## CANON POWERSHOT A85

**Features**

- 4megapixel sensor
- 3x optical zoom
- Thirteen shooting modes
- Up to three-minute movie clips
- 9point AIAF (advanced intelligent auto focus)
- Pictbridge/Canon Direct Print compatible
- Print/share button
- Wide range of accessories
- Canon Image Gateway

Canon has combined some of the world's most advanced digital imaging technology with 60 years of optical heritage to deliver this deceptively simple camera, which enables you to take great photos. The Powershot A85, which we reviewed in our December 2004 issue, has a 4megapixel CCD sensor, a high-quality lens and a super-fast processor, to ensure accurate, clear pictures every time. To speed up focusing and optimise exposure, the camera's Isaps system analyses the scene and makes setting adjustments even before the shutter release is pressed. You can also take up to three-minute movie clips, complete with sound recording, and then play them back and edit them on the 1.8in LCD monitor. For very high-definition playback on a TV, the camera can also record up to 30-second VGA clips.

The camera can be connected via USB cable to any Pictbridge or Direct Print-compatible photo printer, or Windows PC. It includes all the basics you would expect, such as built-in flash, self-timer and both automatic and manual focus. The compact and reliable Canon A85 delivers a highly professional photograph, and at under £200 is great value.

**Please quote order code VX59**

| | |
|---|---|
| RRP | £239 |
| READER PRICE | £199 |

## THE ULTIMATE *PCW LIBRARY* CD-ROM 1, 2, 3 & 4

Includes the entire editorial content of the August 2000 to December 2003 issues in a format you can search, browse and print. The CD-Roms contain the following issues: CD-Rom 1 includes August 2000 to July 2001, CD-Rom 2 includes February 2001 to January 2002, CD-Rom 3 includes January to December 2002 and CD-Rom 4 includes January to December 2003.

**Please quote order code VX58**

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| £46.65 | £41.99 |

## CREATIVE LABS

- Micro-sized – 8.4 x 5.1cm
- 12-hour battery life
- 5GB of disk space
- Removable, rechargeable battery
- FM radio
- Vertical touchpad
- Voice and FM radio recording
- Address book, calendar and more
- Store up to 2,500 songs
- Transfer any data between computers – use as a removable hard drive

This micro-sized mp3 player, reviewed in *PCW* March, has a massive 5GB of memory and stacks of other great features. The memory can store around 2,500 songs, while the battery lasts for 12 hours and is rechargeable and removable. Weighing only 108g, and just 1.9cm deep, the Zen Micro is one of the smallest mp3 players around. It also features an intuitive vertical touchpad, which makes

## HOW TO ORDER

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>> **PHONE**
on 01858 438 883

>> **FAX**
on 01858 468 969

>> **POST** using the form opposite, post your order to: *PCW* Offers Direct, Tower Publishing Services Ltd, Tower House, Sovereign Park, Market Harborough, LEICS, LE16 9EF

# >> www.offersdirect.pcw.co.uk

## ZEN MICRO MP3 PLAYER

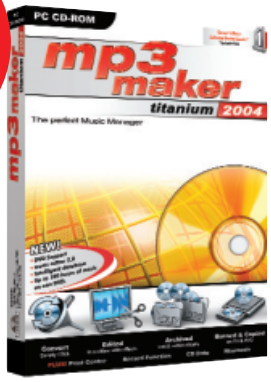
it straightforward to navigate around your music and data.

The Zen Micro is compatible with wav, wma and mp3, and it has

an FM radio (from which you can record) and a digital voice recorder. It also includes a calendar, address book and to-do list which will sync with Microsoft Outlook. This small mp3 player/radio/voice recorder/organiser offers all the cool-appeal of the Ipod mini, but with the bonus of wma-compatibility and more memory and features.

**Select your colour from:**
Silver, light blue, dark blue, purple, black, white, pink, red, orange, green.

**BUY THE ZEN MICRO and get MP3 MAKER FREE**




Burn CDs and DVDs, categorise and archive mp3s, convert and edit music files and mix playlists. Mp3 Maker converts CD tracks into mp3s and back again, and supports all popular formats. It has a music catalogue that finds and saves every song on the PC in categories – automatically and intelligently – and it records from all external sources, including Internet radio.

**Please quote order code VX60**

| | |
|---|---|
| **RRP** | £189 |
| **READER PRICE** | £179 |

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# THE PCW INDEPENDENT LEGAL HELPLINE

**Have you ever wanted to clarify a legal query, but without the expense of consulting a solicitor? Ever bought a product you wanted to return, but were unsure of your rights?**

PERSONAL COMPUTER WORLD

Well, Personal Computer World can now offer you direct access to independent, practicing solicitors who can offer legal advice on a wide range of problems, at a fraction of the cost. All solicitors have a minimum of three years experience and are waiting to help with any legal queries. So whatever your legal problem, simply call the number below.

Calls are charged at £1.50 per minute premium rate and will be shown on your standard telephone bill. An average call lasts approximately 6 minutes. An ICSTIS* message will be played before the call is answered. There is no queuing system. *ICSTIS - Independent Committee for the Supervision of Telephone Information Services. This service is provided by Infogenie. English law applies. Should you have any queries please call 0870 800 6155.

**hotline is open 7 days a week 8am to 10pm**

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# May Cover Disc

Five pages of workshops, special offers and more >>

## On the CD

Actinic Catalog 25 7
Migrate Easy 7 Personal
Panda Titanium Antivirus 2005
Internet Business Promoter 4
Find Your Child

## On the DVD

Actinic Catalog 25 7
Migrate Easy 7 Personal
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Internet Business Promoter 4
Find Your Child
4D Meetings 1.01

### Using the cover disc

The *PCW* cover disc uses a web-browser-style interface. To get full functionality, you'll need to use Microsoft Internet Explorer (version 5.5 or later). Unfortunately, Netscape doesn't properly support this software. However, we have also provided links to the featured programs so that you can still copy them to your hard disk or install them manually (the standard download dialogue box will appear). Programs can be found in the \software\ folder on the disc.

### Starting the disc

The CD-Rom (or DVD) should auto-start. If it doesn't, double-click the CD-Rom/DVD icon in My Computer, or open the terms.htm file on the root of the disc.

### Problems?

Please note that we cannot give support on individual programs contained on this disc.
If you have problems running the disc or any of its content, please note these guidelines:
**FAULTY DISC >** If the disc is physically damaged and will not load, return it to this address for a replacement:
*PCW* May 2005 cover disc
ABT, 306 St Mary's Lane
Upminster, Essex RM14 3HL
quoting reference **'*PCW* Vol 28 No 5'**.
**PROBLEMS INSTALLING/RUNNING THE SOFTWARE >** Check the support page on the disc, or check the manufacturer's site.
**GENERAL DIFFICULTIES >** Call 08700 885 995 (9.30am to 5pm Mon, Tues, Thurs & Fri; open until 8pm on Wed and 10am to 2pm Sat). Or go to www.vnusupport.co.uk.
Or email us at pcw@vnusupport.co.uk.

## SOFTWARE LISTING

### CD

**Full versions**
Acronis Migrate Easy 7 Personal
Actinic Catalog 25 7
Panda Titanium Anti-virus 2005
Find Your Child
Internet Business Promoter 4.1.5

**Trial versions**
Acronis Disk Director Suite 9
Acronis True Image 8
Panda Platinum Security 2005
Realviz Stitcher Express

**Buyer's guide ebooks**
PCW's invaluable guides to all you need to know when buying camcorders, cameras, graphics cards, hard drives, monitors, motherboards, printers, processors, audio devices and TV tuners

**Freeware**
Audioshell Beta 1
Cobian Backup 6.1.1.264
Dariolius 2.5.476
Doppler v2
Fast Launcher 3.11
ForecastFox 0.5.9
Fresh UI 7.28
Grabzilla 1.1
HDDlife 1.0.14 beta
IZArc 3.5 beta2
Media Catalog Studio Lite 1.9
Objectdock 1.1
Omea Reader 1.0.2
Photofiltre 6.1
Smart FTP 1.1.984
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**Plus loads of resources and much, much more**



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# Actinic Catalog 25 7

FULL VERSION

Online shopping is big business, and there's never been a better time to open your own web store. Here's how to get started

**Need to know**

**System requirements**

Windows 98 or later, 64MB Ram, 60MB disk space, Internet Explorer 5.5 or later

**Information**

www.actinic.co.uk

**Registration**

Not required (serial code built in to program). Three months of web hosting is provided free of charge. To activate your free web space, follow these four simple steps:

1. Register at **http://shop.actinic.com/25**. You will then receive a user name, password and shop URL for your free hosting, with instructions on how to upload to your own web space if you prefer.
2. Install and run Actinic Catalog from your *PCW* cover disc.
3. When you are ready to upload your site to the Internet, Actinic Catalog will prompt you for your user name and password. Your site will then be uploaded, and you will be able to start receiving orders immediately.

**Limitations**

A maximum of 25 products

It's taken a while, but last Christmas confirmed that the UK is now happy to shop online. Sales at Internet stores are growing six times faster than in the high street, and we spent over £14.5b online in 2004. If you want a share of the profits, now would be a very good time to open your own online shop.

If it sounds complicated, don't worry – it's not with Actinic Catalog. The program creates a complete shopping site for you, with no HTML or web design knowledge required. Just fill in the blanks for the products you want to sell (images, text, prices and so on) and you're done.

An attractive starting design means this may well be enough, but it's easy to change the look of your site, if required. A couple of mouse clicks can change your site design to one of over 60 different themes, for instance. And these are quality designs, every bit as good as any other store online.

Then a couple more mouse clicks let you choose from more than 50 colour schemes. If they still don't match your company colours, select a new colour for text, links, form background and so on, and create a custom scheme to match your precise needs. Or, if that's not enough, there's always the option to edit a Catalog template directly (Dreamweaver integration makes this pretty straightforward).

Catalog has much the same flexibility when it comes to your product list, too. You start with the freedom to create whatever sections and sub-sections you like, making it easier for visitors to find what they want. And the same product can appear in more than one section.

Although this version is limited to 25 products, you can still have unlimited variations of whatever type you like. So there's no reason you can't have 'Pie' as one product, say, with various flavour variations such as apple, pecan or steak and kidney.

Even within a single product listing, there are plenty of opportunities to do your own thing. If you want to add more text, extra images or even a large image to give a closer look, but in a pop-up window so shoppers don't have to wait, it's all here, and very accessible.

What really makes Catalog a winner are some of the additional automated features you get for free. Site navigation is critical, for example, but with a menu bar, section list and site map, your users aren't going to get lost. There's also a very fast, sophisticated product search that will lead potential shoppers to whatever they want.

Meanwhile the secure shopping cart beats many of those you'll find online right now. Your Catalog store will display a cart content summary on every page, for instance. The contents can be saved for later completion or as a wish list. There's automatic email confirmation of orders, and a 'Remember me' option for returning shoppers.

The order processing package copes with orders online, by phone, fax or post, calculates shipping, handling and taxation costs, monitors stock levels, prints invoices and packing lists, and more. Catalog is a tool for running your entire business, not just creating HTML, and it's a must-have for anyone starting out in ecommerce.

## Key features

- Over 60 design templates
- New colour schemes and layouts
- Generated sites are search engine-friendly
- Flexible catalogue for product variations
- Create special offers such as discounts
- Menu bar, section list and site map
- Fast integrated search
- Shopping cart summary on each page
- Automatic email confirmation of orders
- Monitor stock levels and print invoices



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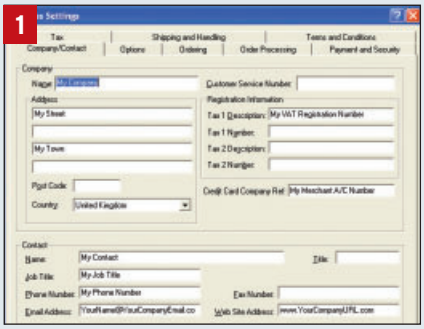
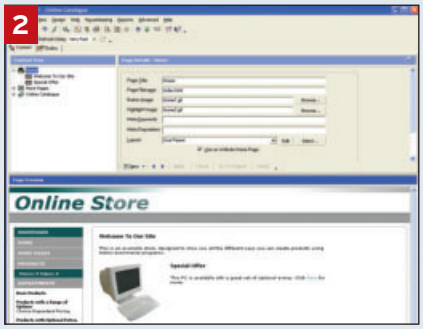
# Build your own online store, no web design skills required

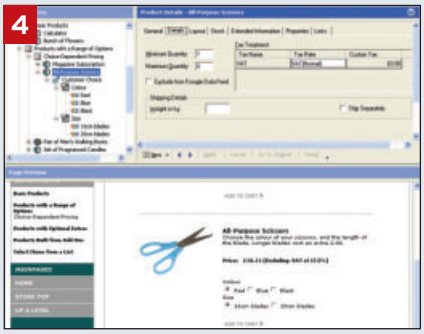



**1** Start by telling Catalog more about your company, in View > Business Settings. There are options to fill in your company name and address, shipping and handling charges, and common site requirements such as a privacy policy, an 'About us' page and more. If you're not sure about something, leave it blank for now.




**2** The program comes with a sample store, and you can see a site preview in the lower Catalog pane, or navigate through it via the left-hand content tree. This already looks good to us, but you can easily change the look of your store (Design > Themes) or customise its colour scheme (Design > Colours).

**3** Expand the Online Catalogue section of the Content Tree, then select Basic Products > Calculator. The Product Details screen stores information about whatever you're selling. This starts with the basics (description, price), but you can also have extra info on a pop-up page, or even a link for information elsewhere.




**4** If you think that's a powerful selection, expand 'Products with a Range of Options' > 'Choice-Dependent Pricing' > 'All-Purpose Scissors' for something even better. Every product you sell can be customised in any way you like (colour, size and so on). Browse the Content Tree to get a feel for how this works.

**5** The Preview window gives you a good idea of how your site will look, but click Web > Offline Preview and you'll also get to see it in your default browser. This can be helpful, but don't expect too much. Options such as Site Search are run from CGI scripts, and won't work when you're viewing the pages offline.

**6** When you're happy with the store, click Web > Update Website to put it online. If you've chosen to take up Actinic's offer of hosting then fill in this form and you'll get a user name, password and shop URL. The free three months of web hosting don't support SSL (Secure Sockets Layer), but otherwise are fully working and will let you see how the store runs.

# Upgrade >> Unlimited version

**New features**

>> Add an unlimited number of products to your store online

Your free Actinic Catalog 25 version 7 supports up to 25 products, enough to get your business onto the Internet, trading, established and taking orders.

To go further with Actinic Catalog, *PCW* readers can upgrade to the unlimited product version for only £299 – a saving of £80 from the retail price.

SAVE £80 OFF RRP

If you would like to upgrade, head to **www.actinic.co.uk/25** or call Actinic Sales on 0845 358 8717 stating that you'd like to upgrade from the *PCW* edition of Actinic Catalog.



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# Migrate Easy Personal

FULL VERSION

## Make changing hard drives easy with this disk-cloning tool

**Need to know**
Windows 98 or later, 32MB Ram, 5MB disk space, at least two hard drives

**Information**
www.acronis.com

**Registration**
Go to www.acronis.com/mag/vnu-migrate and follow the instructions

**Limitations**
None

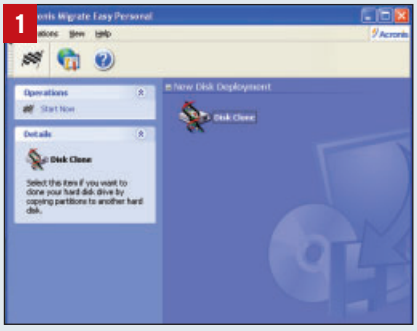
Installing a new hard drive can give you more storage space and a significant performance boost, for surprisingly little cash. But reinstalling Windows (and all its patches) and then transferring lots of applications is enough to put most people off the idea. Acronis Migrate Easy can help.

At the core of the program is a disk-cloning engine. Install the new hard drive, then run Migrate Easy, and it'll transfer an exact copy of your current disk. The whole process is driven by straightforward wizards, and doesn't require any technical knowledge.

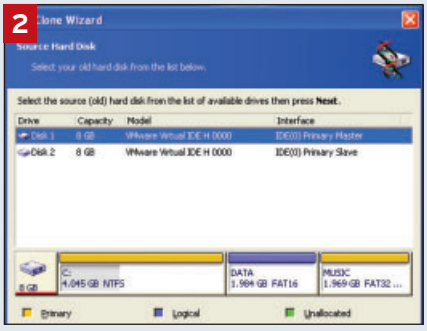
If your original hard drive is partitioned, Migrate Easy has several different ways to deal with this. By default, it will increase the partitions in proportion to the new space, which will probably be most people's option of choice. But you can also choose to transfer the current structure as it is, or manually rearrange the partition sizes to get the precise results you need. (See the walkthrough below for an idea of how this works.)

If you're not going to be using your old drive any more, then be careful. You could manually delete its files, even run a format, but the chances are at least some data will still be recoverable later on. Migrate Easy therefore has an option to securely delete your files by overwriting disk space (and multiple times, if you choose the most secure option). It's a sensible extra step that ensures your most private files will stay confidential, no matter what happens to the old drive.

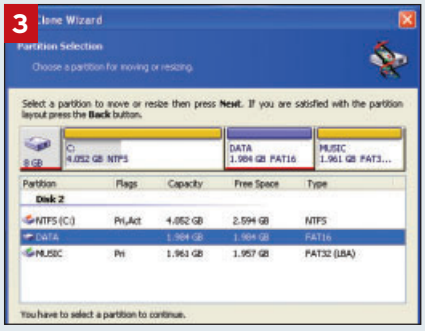
## Three steps to configuring your new hard drive




**1** Launch Migrate Easy and click Start Now > Next. Select 'Automatic' and the program will copy all the partitions from your old drive (resizing them if appropriate), and then make the new drive bootable. If you need more control, select the 'Manual' option and click Next.




**2** It now displays all the hard drives on your system and lets you choose the source (the drive you're copying from) and destination (the one you're copying to). Then you choose whether to keep the data on your old drive, or securely delete it. This can be useful if you're selling it later.




**3** If your drive is partitioned, there's one other decision to make. You can accept the default option to resize each partition in proportion to the new drive's size, leave the partitions as they are, or resize them manually. Your data will be preserved whatever you select.

# Upgrade offer >> True Image 8

SAVE £5 OFF RRP

**New features**
- Back up and restore your system
- Create an exact disk image of your hard drive

Acronis True Image version 8 lets you back up and restore your system by creating an exact disk image of your hard drive, ideal if you want to test software on your PC. *PCW* readers can get True Image 8 for £24.99 inc VAT, a saving of £5 on the retail price.

To purchase True Image v8 at this discounted price, head to http://www.computrolley.co.uk/products.php?category=19.

# Panda Titanium Antivirus 2005

FULL VERSION*

**Need to know**

**System requirements**

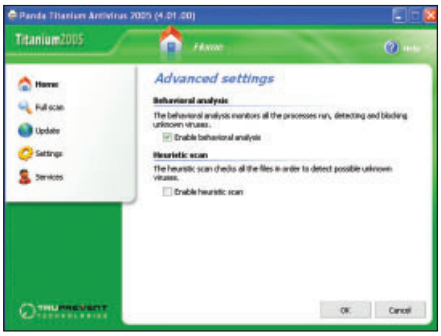
Windows 98 or later, 96MB Ram, 80MB free disk space, Internet Explorer 5.01 or later

**Information**

www.pandasoftware.co.uk

**Limitations**

*Six months of updates




**Titanium Antivirus 2005 detects and blocks new threats**

Is your PC safe from the latest virus threats? New dangers appear every day and, until they've infected enough people's machines to get noticed, you may have no protection at all.

As well as Panda Titanium Antivirus 2005's frequent updates, a new Truprevent feature monitors the behaviour of programs running on your PC, assessing their threat level and blocking anything that looks like a real danger. There is no need for a signature update so you're protected against brand new threats as well as old ones.

Viruses and Trojans aren't the only online danger. Titanium Antivirus 2005 also includes anti-spyware and anti-dialler software, along with an integrated firewall to keep you safe from hackers.

Install Titanium Antivirus 2005 and it starts protecting your PC immediately, with no further intervention required. The new Ultrafast engine uses minimal system resources, and is around 30 per cent faster than before.

## Upgrade >> A full year's licence

Panda Titanium Antivirus 2005 will protect your PC for six months, but then, unfortunately, the licence will run out.

However, if you have found the program useful, here's an opportunity to renew the licence.

Prices for a full year's licence start at £23.99, or you have the option to buy a three-year licence for £56.99.

To find out more about these deals, or to place your order, visit the Panda Software online store at www.pandasoftware.co.uk.

# Internet Business Promoter 4.1.5

FULL VERSION

**Need to know**

**System requirements**

Windows 98 or later, 12MB disk space, Internet Explorer 5.x or later

**Information**

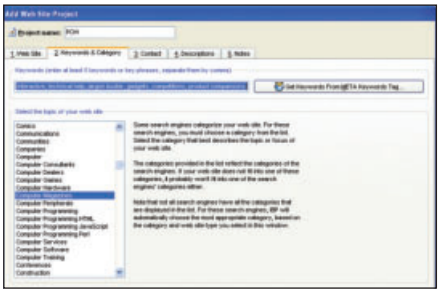
www.axandra.com

**Installation instructions**

Get your unlock code from www.Axandra.com/magazine-special-offer

**Limitations**

Online support



**Get search engine optimisation advice, then submit your pages to all the relevant engines and directories**

Whether you've built a web store with this issue's Actinic Catalog, or have a site of your own already, getting it up and running is just the beginning. Your next task is to make sure that other Internet users can find your site easily. Internet Business Promoter can help.

The process starts with the Search Engine Ranking Checker, which finds where you appear in Internet searches right now.

Next, spend some time researching the keywords and phrases others use when searching for the products you're trying to sell. 'Furniture' is a little broad, for instance; 'Pine furniture', or 'Bedroom furniture' could be better.

Now use the Top 10 Optimizer to compare your site against the best of the competition, and check your keyword use with the Keyword Density Analyzer. Add or remove keywords from your pages according to the recommendations it makes.

Once your pages are optimised, use the submission tools to submit your site to search engines, directories, and industry-specific sites all over the web. Create submission reports to track your progress, then re-run the Ranking Checker and look for improvements.

## Upgrade offer >> Latest version

By the time you read this, the latest version of Internet Business Promoter will be available and *PCW* readers will be able to upgrade for a discounted price. The latest version will include a whole host of improved features, to maximise the potential of your new online business.

As details were to be finalised, you will be informed of the upgrade option once you've registered your software.



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# Find your child

FULL VERSION

**Need to know**

**System requirements**
Internet connection, browser

**Information**
findyourchild.net

**Registration**
Follow the instructions on the disc

**Limitations**
Includes five free searches and a 12-month registration

**Track the location of your kid's mobile phone in the UK from the Find Your Child website or by using your own phone**

Find Your Child allows you to do exactly what it says. Having phoned your child's mobile phone and received no answer, you can sign in to the service and it checks the location of the phone for you, displaying this on a map (if you're at home on the PC) or by an SMS message (if you're using your own mobile).

The service is compatible with all the main UK networks (Fresh, $O_2$, Orange, Tesco Mobile, T-Mobile and Vodafone), but there are limitations. It only works if the mobile is turned on, for instance. And it is only accurate down to street level.

Find Your Child also sends an SMS message to the phone, telling its owner that they're being tracked. This can act as a security feature, as it ensures that no-one else can track your kid's location without them noticing.

Other security checks include a registration procedure where you must prove you're over 18, and verify your address. This makes the setup process more complicated than usual but, as the company points out, it's designed with the safety of your child in mind.

## Upgrade offer >> More search credits

Our giveaway account provides enough credit to add one mobile phone number then carry out five searches, so you'll be able to see how it works. After that, all charges for the service are made on a pay-as-you-go basis, with credits that you top up online.

Prices range from £1 if you're adding another mobile to be tracked, to 50p each time you track a mobile, or 15p for an SMS sent from the Find Your Child site. Find the full price list at www.findyourchild.net/buynow.html.

# 4D Meetings 1.01

FULL VERSION

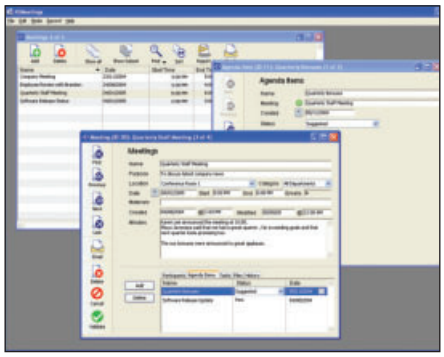
ON OUR COVER DVD

**Need to know**

**System requirements**
Windows 2000/XP, 128MB Ram, 35MB disk space, synchronisation features require Windows Office XP

**Information**
www.4d.com

**Limitations**
None



**4D Meetings provides a range of meeting-related functions in a single interface**

Meetings – that heady mix of bureaucratic tedium, office politics and coffee, where it takes hours to make the simplest decision. We can't do much about any of that, but 4D Meetings can make the process of organising these events easier. Install the program and you'll find options to create agendas, distribute minutes, assign tasks to individuals, organise contact information, send emails and more.

There's a lot to learn but fortunately the program comes with plenty of sample data to help you get started. Launch 4D Meetings to take a closer look, then log in with the default user name and password (both are set to '4dmeetings'; use File > Preferences > Change Password to use a password of your own).

You'll need to start by adding the details of people who might come to your meetings (File > People). There's also the option to plan meetings with a To Do list (File > Tasks).

When you're ready to set up a meeting, click File > Meetings > Add. You can then specify the obvious details (purpose, location, date, time, participants), create an agenda, add files and tasks that relate to the meeting, and email participants with all the details. Browse the example meetings to find out more.

## Offer >> More 4D products

Want to find out more about 4D Meetings? The 4D site (www.4d.com/products/4dmeetings.html) includes extras such as a free online class, and a mailing list you can join. You can also download the source code (the application was written with 4D's own 4th Dimension programming tool), and check out the other development tools on offer, which range from standard desktop programming environments to complete ecommerce solutions (www.4d.com).



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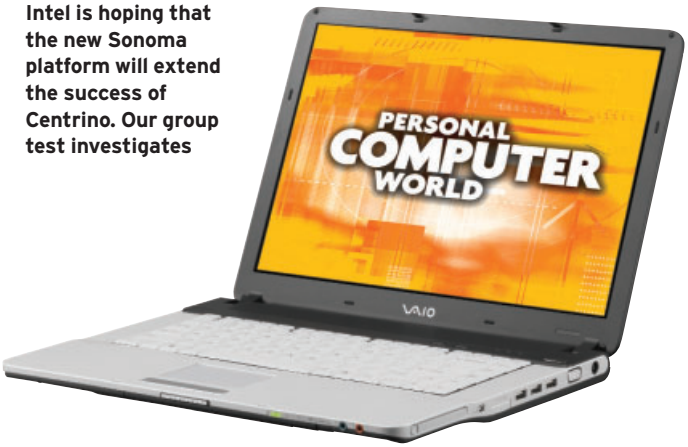
# Next Month

## on sale April 21 2005

Intel is hoping that the new Sonoma platform will extend the success of Centrino. Our group test investigates



Video entertainment on the move is becoming more popular. We look at the best devices on the market

Linux has captured the hearts of many PC users, but it is still rarely used as a main desktop OS. We ask, is it time to ditch Windows?

## Don't miss June's *PCW*...

### Sonoma laptops

Centrino helped change the face of notebook PCs, but will Sonoma yield even better performance, longer battery life and more lightweight designs? In next month's group test we investigate.

### Portable multimedia players

We take a look at the range of new products that let you play recorded TV, video and music, show photos and listen to the radio all in one small, handy device. We'll test their ease of use, consider their value for money and tell you which are the best on the market.

### Linux

We all know the David and Goliath story behind Linux as it eats into Microsoft's Windows market share. We test the latest commercial distributions and ask whether they are good enough to entice us into embracing the world of open-source software.

### Surge protection

We all like playing with the cool stuff on our computers but few of us think about the important products that protect our PCs. We review the latest electrical surge protection devices that will stop your computer from being fried.

## For regular updates of what's in June's issue, go to

**www.pcw.co.uk/magazine/nextissue**

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## MAY 1985

Displayed on the cover of our May 1985 issue was the brand new Amstrad CPC664. The most striking feature was the integrated floppy disk drive with the letters FDD. PC manufacturers would not make such a song and dance about a floppy drive now, but back then it was something to shout about. With 64KB of Ram and monochrome monitor, the CPC664 cost just £339, making it a real bargain. Soon after its release, Amstrad produced the CPC6128, which sported an improved case, double the Ram and sounded the death knell for the CPC664.

Concerns about the home computer market were growing

**Texas Prolite: Portables have come a long way since 1985. They're sleeker, more powerful and certainly lighter**

with John Sculley, then president of Apple Computer, claiming there was no such thing as a home computer market. The main problem was that a computer wasn't as compelling to buy as a washing machine or TV. The Xerox Dynabook concept was seen holding most promise. Conceived as a portable, animated and interactive book, it would have all the functions of a desktop micro and could also be used as a sketchpad. Tablet PC fans will wonder why it took so long to materialise.

## MAY 1990

There are, understandably, too few mentions of cows in *PCW*. But in the May 1990 issue, there was a rare instance where we relayed information on our bovine friends. In a group test featuring the new phenomenon of CD-Roms – only about 5,300 people in the UK had them at the time – About Cows was reviewed. So, if you were into reading poems about cows, learning how to make cheese or reading cow-related cartoons, you probably rushed out and bought your own copy. If you had a CD-Rom drive, that is.

In the early 1990s, transferring files and data between different platforms was a major problem. With notebook computers using 3.5in disks while most desktop PCs used 5in ones, and the Mac adding to the equation with its own format 3.5in disks, working while on the move was troublesome. Back then you had to rely on various software that could feed data from one machine's serial port to another. The packages reviewed included PC Anywhere and Carbon Copy Plus, but our favourite was Rapid Relay Plus, a bargain at £79 for the software and a cable.

The Chipchat section described how *PCW's* editorial team was addicted to Atari's portable Lynx system, EA's Indianapolis 500 racing game, IBM Current and even a yo-yo.

## MAY 1995

Anyone who has been reading *PCW* for a while may have noticed a few recurring themes, and May 1995 was no exception. Not for the first time or the last, our cover screamed 'Fastest PCs ever'. This time, 120MHz Pentiums were the flavour of the month. We looked at two systems, from Gateway and Viglen, costing £2,849 and £2,999 respectively. Despite the high price tag we were blown away by the speed and they were sadly missed when they left the office.

Perpetuating another theme, we looked at 'PDAs: the next generation'. This time the round-up included the Motorola Envoy, Sharp Zaurus and the Sony Magic Link. The Sony and the Motorola were based on the Magic Cap OS, whereas Sharp opted to use Synergy for the Zaurus. Some features, such as pen support and built-in modems, percolated through to later PDA offerings, although it has been a long time since we saw a PDA with a built-in modem. There was also speculation about Winpad – a Microsoft and Intel initiative for Windows-based PDAs. Once again, it took its time to materialise, albeit in a vastly altered form, as the Tablet PC.

It's easy to forget, but in thosedays getting Internet access when you were on the road was not easy. We took a brief look at what was available, such as the early Nokia data cards for use with a notebook. For a truly mobile solution, there was even a data card bundle available for the now defunct Apple Newton.

## MAY 2000

This month saw a column by the then editor bemoaning the numbers game played by PC and component manufacturers, which were launching ever faster products into the market to tempt consumers. Pointing to the unbelievable rise in CD-Rom speeds and the constant battling between AMD and Intel, he asked, 'Do we really need this?'

He said he'd just seen the first AMD 1.2GHz processor, at that stage not commercially available. With processors already clocking 850MHz and consumers unable to take full advantage of the speed, would they need yet more? Well, five years on we know the answer – 3GHz-plus is now the norm. Drop below that magic figure and the processor is considered to be old and slow.

Having said that, we stuck to our guns and looked at what sort of PC you could get for £1,200 ex VAT, and none had a processor faster than 750MHz. If you're not too fussy about gaming, provided you had upgraded a few components they would still run most applications today, highlighting the point that you don't always need the latest and greatest to get good value and longevity.

A sign of how far computing has evolved in the past five years comes through in our feature on Wap, which we thought showed potential but were unsure if it would really take off, and our group test of 21in CRT monitors. Well, Wap is still here but fading into obscurity, and TFTs have become so pervasive that we wouldn't even consider testing a CRT today.

**The *PCW* team**



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**Jim Martin,** Labs Editor, PC Pro, March 2005 Issue

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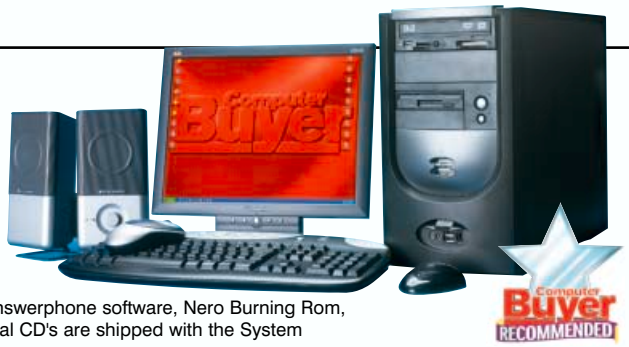


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**Ben Henley,** Labs Writer, Computer Buyer January 2005 Issue

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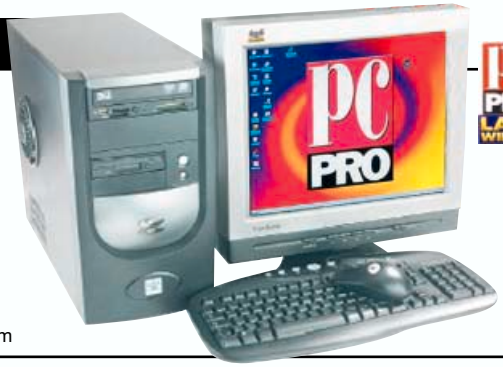


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